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An Address.¹

By F. A. HOPE MICHOD, M.B. (London), [M.R.C.S. (England), L.R.C.P. (London),

Retiring President, Queensland Branch of the British Medical Association.

ACCORDING to the Articles of Association of the Queensland Branch of the British Medical Association No. 22, the business of the annual meeting is: C. "To receive an address by the incoming President."

Apparently it was found that if a member was compelled to give his address before holding office, there would be a difficulty in filling the position. So the rule has not been observed, but according to ancient custom, before vacating his office, the outgoing President must pay for the pleasures and joys he has experienced during his presidency by delivering an address.

When I remember the scholarly and scientific orations delivered by my predecessors, I find the ordeal somewhat appalling. One of my friends suggested that I should touch on some of the important medico-legal problems we have had to consider during the past year and finish up with a few experiences that have come under my notice during a lengthy residence in the central-west of Queensland.

Medico-Legal Problems.

The most important matter which the Council has been called upon to deal with during the preceding year has undoubtedly been the unfortunate dispute between the friendly societies and the medical men of Toowoomba. You are probably all aware that early in the year the Toowoomba Friendly Societies' Institute demanded a reduction in the capitation fee. This was discussed by the Council and it was agreed that owing to the financial distress which was prevalent, a temporary rebate of 10% should be

¹Delivered at the annual meeting of the Queensland Branch of the British Medical Association on December 11, 1931.

offered, provided that the Institute would agree to accept the principle of the "open list". This the Institute would not consider but demanded a reduction of the capitation fee to twenty-six shillings. One of our members holding a position with the Institute was informed that if he would not accept the reduction to this amount by May 1, his appointment would cease. In consequence of this action a deputation was sent from the British Medical Association, Toowoomba sub-branch, to interview the Council in Brisbane, and after a lengthy discussion it was agreed to assist the members in the dispute. We sent several delegates from Brisbane to address meetings of the friendly societies in Toowoomba, as neither the Council nor the sub-branch was anxious for any fight. We have always considered that the principle of the "open panel" was the best for the medical men practising in any town and also the most advantageous arrangement for the individual lodge patient; it is universally accepted in Great Britain and has proved most satisfactory. At that time we considered a 10% rebate was a sufficient reduction of the capitation fee; it had been accepted in the metropolitan area in which there was as much distress, if not more, than there was in Toowoomba. However, argument was of no avail and because one of our members adhered to the combined decision of the Council and the local branch, his services were dispensed with. The majority of the members of the Branch in Toowoomba considered this treatment unfair, so we decided to start a British Medical Association Contract Practice Service. The Council, considering the attitude the local branch had taken up was fair and reasonable, agreed to assist them. An organizer was appointed and the service inaugurated. It is making slow but steady progress and the scheme is working satisfactorily; several men in Toowoomba who had given up contract practice agreed to take that work on again; others who were giving up contract practice agreed to enlarge their lists, whilst consultants agreed to give a 25% reduction of their usual fees to members of the British Medical Association Service.

The fight with the Toowoomba Institute was not wanted, and was not decided on, except after prolonged and lengthy discussions and numerous attempts made to avoid it; but now that it has been decided upon, it is necessary for the whole of the Branch to support the Toowoomba scheme. If it fails, it will mean that any local institute or friendly society, anywhere in the State, will be able to decide what they consider a fair and reasonable remuneration for medical service and we shall revert to the old system of each town making its own arrangements with the local medical men. This chaotic condition, which was full of anomalies, was in existence until a few years ago and as you know was terminated only after a fight in the metropolitan area. If we succeed, we shall have established a service which has many advantages. We could more easily control all contract medical service, fixing the capitation fee and under ordinary circumstances offer this service for the use of the friendly societies, but when amicable arrangements could not be maintained with the friendly societies, we could still give the working man medical service under our own organization.

Within the last few weeks we have received deputations from the metropolitan societies, who consider that the present depressed financial condition of the country, with greatly increased unemployment amongst the members of the different societies, has reached such a climax that it is impossible for them to carry on at the present capitation fee of thirty shillings, less 10%, and even mentioned that they thought that the capitation fee might be reduced to twenty shillings. It was evident during the discussion that the crux of the whole situation was to decide what was a fair capitation fee under the living conditions, which existed at any particular time, in any particular area. It was suggested that if any calculations could be made either from the figures from which the basic wage is calculated or by any other figures, that then the capitation fee should be decided upon and a percentage increase or decrease could be calculated during times of prosperity or depression, and the capitation fee could be automatically increased or reduced every six or twelve months. To try to obtain such a figure the assistance of Professor Brigden, who is in charge of the Government Bureau of Economics, has been called upon, and he is giving us his ready assistance. As a result of our deliberations with him, there is every possibility of a figure being arrived at and a formula evolved, which will enable us to make an annual adjustment of the capitation fee in conformity with the fluctuation in the prosperity of the majority of the workers who constitute the friendly societies. This will mean a big step forward in eliminating the constant disputes which have in the past arisen between the medical profession and the friendly societies. The profession is willing to give service to the friendly societies at a reduced rate, but there is always a tendency for men undertaking contract practice service to consider that the capitation fee is too low, and for the friendly societies to consider the fee is too high, and whenever it is settled, alterations in the general prosperity of the workers in the State immediately leads to one side or the other considering that the capitation fee should be altered, and a lengthy process of bargaining takes place. If we can with Professor Brigden's assistance devise the formula and obtain its acceptance by the friendly societies, a considerable step forward will have been reached towards establishing a more permanent friendly relationship between the two bodies concerned.

The next most important subject which has occupied the attention of the Council during the year was the publication of the Report of the Royal Commission on Hospital Administration. This very valuable report, we hoped, would be the basis of the new *Hospital Act*, which we were promised would be brought in, during the present Government's term of office. Although the Cabinet has given the Council a very sympathetic ear and has considered our proposals, the fact is that it is impossible, at the present time, to consider any change in hospital administration which would necessitate any alteration in the present method of taxation, if that alteration should mean any increased taxation on any section of the community. This restriction has effectually interfered with the Cabinet adopting our suggestions in regard to a new hospital act. How-

ever, it has been granted that a medical man appointed by the Cabinet should have a seat on the Brisbane and South Coast Hospitals Board, and I am confident that the appointment of Dr. W. Robertson to that position will give every satisfaction to all parties.

There is still a possibility that one Commissioner of Hospitals may be appointed, to control all the hospitals in Queensland. This is not exactly what we requested, for we are of the opinion that the satisfactory administration of all the hospitals in Queensland cannot possibly be efficiently controlled by one man unless he is assisted by a suitably constructed department entirely removed from political influence, but here again the financial condition of the State at the present time is an unfortunate stumbling block.

It is most unfortunate that the amount of valuable work which was carried out to produce the evidence submitted to the Royal Commission, and that the excellent report produced by those gentlemen who sat on the Commission, should have had such a poor result, but the report is a permanent record, and later on, when times improve, greater benefit may be achieved and more of the recommendations submitted by the Branch Council adopted.

These are the important points of the year's work. When put down on paper, it does not appear very much, but little as it is, a considerable amount of work has been necessary to achieve even so small a result. The ordinary routine work you have before you in the Annual Report.

Personal Experiences.

This concludes the serious portion of my address. I will now give you a few experiences and observations made during a lengthy residence in western Queensland.

I came to Queensland in 1903, having contracted pulmonary tuberculosis following an acute bronchopneumonic infection which had been treated for two years on Nordrach principles assisted by graduated exercises, and which had then reached a quiescent stage.

On arriving in Sydney on February 14, 1903, I met the late Mr. L. Bruck and discussed with him the various climates of Australia. (His personal experience of climatology, though possibly not scientific, was extremely practical.) On his suggestion I selected Tambo, from the practices which at that time were on the market.

The selection of Tambo was most beneficial. I had the good fortune to commence my residence in central Queensland early in March (the commencement of the winter). Tambo is a very small town situated about 130 miles north of Charleville on the western line and about 90 miles south of Alpha on the central line. It is situated on the watershed of the Ward and Barcoo Rivers, it is supposed to be 1,200 feet above sea level, in black soil country, in the centre of a very valuable Merino sheep district; it is cooler in the summer than most central Queensland towns, and is cold and bracing during the winter months. As I said before, I had the good fortune to strike the commencement of the winter, and soon found that the change from London to

Tambo was most beneficial. From a lengthy experience in Tambo, Roma and Longreach I have formed the opinion that the central Queensland climate is beneficial for pulmonary tuberculosis only during the winter months, that is, if there is any active disease present. Probably in October and almost certainly early in November the shade temperature will go above 105° F., and as soon as this happens, the disease makes rapid strides. Even a quiescent case has to be watched during the summer months, and if there is any doubt about the activity of the disease the patient should be sent to a cooler climate immediately, Stanthorpe for preference, but in central Queensland Springsure is beneficial. Many men practising on the coast are not aware of this and I have frequently had patients sent to me in summer months, with active pulmonary and worse still, laryngeal tuberculosis. Without exception they became rapidly worse, and if they could not be immediately sent back to a cooler climate, frequently died. If the disease was in the quiescent stage, the beneficial effect of the dry climate usually outweighed the detrimental effects of the heat. Whilst on this subject, it might be well to mention that though the climate of central Queensland is extremely beneficial, the living conditions are frequently not so, an easy life is not readily obtained, fresh milk is often unobtainable and frequently only in small quantities. The life of a station jackaroo is most unsuitable; it is hard, rough, with frequently very little fresh milk, with long days in the saddle, in the broiling sun. Station managers are naturally not anxious to receive possible tuberculous patients on their staff, more particularly in the position of book-keeper who lives at the head station, and if there is any suspicion of the man's pulmonary condition, his services are usually quickly dispensed with, and I have frequently seen financial worries added to the patient's physical disability.

On arriving at Tambo I found I had been appointed to the Tambo District Hospital which was built in 1872. It was called a hospital, but it consisted only of several large rooms, in a galvanized iron building, built flat on the ground with a veranda all round. I imagine it is called a hospital because one small room was fitted with shelves, upon which were bottles containing drugs, and was labelled the dispensary. There was no operating table, no surgical instruments of any sort, a matron who had many good points and some experience, but had not been trained.

I found in the hospital one patient seriously ill with what I diagnosed to be an acutely inflamed gall bladder.

The patient was a Kanaka, aged eighteen. He had a large, tender, cystic tumour connected with the under surface of the liver, his temperature was 37.2° or 37.8° C. (99° or 100° F.) at night, no vomiting, no jaundice, only acute and very severe pain; he looked very ill. I did not find the diagnosis easy. Hydatid disease I had only read about, I considered that the abdomen should be opened, but was not anxious to commence a surgical career in Australia, with a doubtful case of this sort, without any skilled assistance, no anaesthetist, very bad light which could be improved only by using kerosene lamps. My idea was to temporize and if possible get the patient away to a coast hospital. However, the patient's condition became rapidly worse, and I considered something must be done. So on the third day after my arrival, having found that the local

saddler was supposed to be well skilled in the administration of chloroform, having given it several times to horses, and on a few occasions to women to assist the doctor in difficult childbirth, he readily accepted the responsibility. The kitchen table was fixed up, the matron was to be the first, second, and every other assistant; my own feelings were not exactly happy, but eventually the time for activity came. The anaesthetist had arrived, I went to get the patient into the theatre and found him dead on the floor; he had apparently got out of bed and dropped dead. On *post mortem* examination the supposed gall bladder was a hydatid cyst and the movement of getting out of bed was sufficient to cause a rupture between the cyst and the inferior *vena cava*, and he had bled to death into his own abdominal cavity. I was grateful that I had not been the agent to relieve the tension and to have witnessed probably my first patient in Queensland bleeding to death on the table.

Life was quite enjoyable in Tambo, plenty of riding and visiting stations with shooting and tennis if desired, but very little work, a daily average of three in-patients and four or five out-patients, plenty of time for reading and resting.

My next interesting case was a large aneurysm of the arch of the aorta, which had eroded the manubrium, so that the pulsations were visible as well as palpable.

The patient was a male thirty years of age, with a history of syphilis ten years before. I had been reading an article which dealt with the treatment of aneurysm of the arch with massive doses of potassium iodide. I worked this man up to 7.2 grammes (one hundred and twenty grains) three times a day, commencing with 0.6 gramme (ten grains), 1.2 grammes, 2.4 grammes, 3.6 grammes, three times a day, in ten days, then increasing by 0.3 gramme (five grains) per dose every second day until he was taking 5.4 grammes (ninety grains) three times a day. After that the dose was increased by 0.12 gramme (two grains) per dose every second day until he was taking 7.2 grammes (120 grains) three times a day, which he took for a fortnight. The dose was then slowly reduced, he was lying down for the whole period, but his fluids were not very much reduced. The pulsation in the tumour became less visible, and it seemed to become harder on palpation. The drug appeared to alter the man's character, so that he became extremely irritable, reporting me several times to the Committee; he eventually left in a huff, and "humped his swag" to Charleville, a good 126 mile walk, where he became secretary to the local branch of the Australian Workers' Union and I know he was alive and earning his living five years after treatment.

In Tambo, I had two other experiences. One was to diagnose a fracture, sixty miles away.

A gin had been implicated in a fight, and the station manager was suspicious that her arm had been broken, but he was not anxious to go to the trouble of sending her into Tambo by buggy, if his diagnosis was incorrect, so he described the symptoms on the telephone, and presently asked if I heard anything. On making further enquiries, I ascertained that he was holding the gin's arm in front of the telephone mouthpiece and was trying to demonstrate crepitus, which I distinctly heard 60 miles away. On her arrival it was found that she was suffering from a fracture of the humerus.

The other case is an instance of how, when living in the bush, one must be prepared for, and carry instruments for any emergency.

A man rushed up to my house about midnight, having ridden about thirty miles, telling me that one of the girls on the station had been taken suddenly seriously ill with severe abdominal pains. On questioning, he thought she had been vomiting, beyond that he knew nothing. I packed my saddle-bag with various instruments for an emergency laparotomy, got on my horse and started away, proceeded a short distance, and on second thoughts returned for the midwifery forceps, which were the only instruments required to relieve the symptoms.

On leaving Tambo, I travelled by train from Charleville to Brisbane, but decided to look at Mitchell, as in 1904 there were no doctors nearer

to that town than Roma and Charleville, and motor cars had not arrived on the scene.

As soon as I landed at the hotel, the local chemist asked me to see a bad case of typhoid he had been treating for a couple of weeks. On examination I found a very emaciated girl of about eight years of age, looking very ill, with a septic temperature chart, and soon diagnosed an empyema. The question to decide was the best line of treatment. The financial position of the father precluded obtaining medical assistance from the adjacent town, and the patient appeared too ill to be moved; so after the matter was discussed fully with the father, an emergency operation was agreed to. All my heavy luggage had gone on, and all I possessed was a pocket dressing case. I then collected a piece of gas tubing and a pair of tin snips; the chemist had a pair of incisor tooth forceps which served as lion forceps, a small paper knife served as a periosteal elevator, some retractors were made out of bent hairpins, the chemist had some chloroform and his wife was a trained nurse, so within two hours we had resected a piece of rib, and a large drainage tube was inserted. I stayed two days in the town, but after that was compelled to leave. Though the child was much relieved and doing well, I learnt later that she died about a week after I had left. (I should have taken this patient on to Toowoomba and left her in the General Hospital.)

In Roma, where I spent a year, I had a very small practice and very few experiences. I attempted to establish a sanatorium for pulmonary tuberculosis, with six open air shelters, and there the opinion I have previously stated, that central Queensland is only suitable for pulmonary tuberculosis in the winter months, was confirmed. My patients all did very well during the cold months, but as soon as the summer set in and the atmospheric temperature rose above 103° F. they all began to go down hill, so within a fortnight I gave up the idea and dispersed them all.

I had one instance of the advantages of masterly inactivity.

I was called to a patient 65 miles away, to a man in whose urethra a gum elastic catheter had been broken off. About five centimetres (two inches) of catheter were left behind in the proximal portion of the penile urethra. It was pouring with rain and three inches had already fallen. I was compelled to tackle the trip on a horse, and rode all night through scrub. As I had never ridden more than twenty miles at a stretch before, I simply fell off my horse on arriving at my destination, practically dead to the world. I found the patient, a man of sixty-five years of age, with his bladder up to his umbilicus, having had complete blockage for thirty hours. I tapped the bladder suprapubically and gave him morphine, and then went to bed. As the patient was quite comfortable, I was not disturbed for seven hours and I then found that the fragment had worked down to the distal end of the penis and was easily extracted without any urethrotomy being necessary.

Early in 1906, I was appointed to the Longreach General Hospital, as visiting surgeon with the right of private practice. I succeeded an excellent diagnostician, an old "Barts" man, named Dr. Alfred Hewer. Dr. Hewer was essentially a physician and had no liking for surgery, unless compelled to undertake it, but when necessity arose operated with efficiency. There were no conveniences for surgical work when I arrived in Longreach, all operations were carried out in the dispensary on a horsehair couch. I saw a patient, and heard full details about the operation from the matron, who was present.

This was a case in which Dr. Hewer tied the femoral artery for an aneurysm in Hunter's canal. The aneurysm was of such proportions that Dr. Hewer considered that an immediate operation was urgently necessary. He had no catgut, but being a banjo player, he removed the thinnest string from his banjo, sterilized it in some way, I could never find out how, and within three days successfully tied the femoral artery.

I saw the patient a month after the operation, and I am mentioning it to show what can be done in the country with impunity.

I had a similar experience.

A man who had fallen off his horse and broken his femur was out in the bush for two nights and a day. He crawled a quarter of a mile and when he was brought into the hospital his thigh was about twice the normal size. There was no X ray apparatus to be of any assistance, so I placed the bones in what I thought was fair apposition and waited developments. Two months elapsed and no union had taken place, so I decided to cut down and do a "plating". I had obtained a piece of white metal which as a rule is used by the local buggy builder and usually had his name stamped upon it. I had two holes bored in the plate, and four screws electroplated, screw driver and gimlet were bought from the local store. I found the fracture in the middle third, with a large piece of muscle between the fragments. I freshened the ends of the bone, bored holes, placed the fragments in some apposition and screwed on the plate. The wound healed by first intention and the plate never caused any trouble; the patient carried it for fifteen years and was a wood-carter by occupation. Since I left Longreach he died in the General Hospital, and Dr. Wallace sent me the plate as a matter of interest, which he had removed *post mortem* and which I now show you. It was found, firmly embedded in the femur, almost covered with a large overgrowth of bone.

I was so pleased with this success that I immediately purchased a complete Lane's outfit, and never obtained anything like as good a result. In fact on one occasion I was asked to plate a femur in a neighbouring town.

The patient, a man aged forty-six, had fractured both thighs, and six weeks later there was no union in either. I decided to attack one leg at a time, and I took every precaution to prevent sepsis. It was a very hot summer morning and I had not noticed that some of the windows in the operating room were not protected with fly gauze. I was intent on my work and eventually had the plate fixed and was sewing up, when I noticed half a dozen blow-flies were crawling over the instruments. (The blow-fly is the worst agent for transmitting sepsis known in the west.) The result was dreadful, profuse suppuration and necrosis of a large piece of the femur followed.

Since I have been in Brisbane, I was on a motor tour and called in at a house of refreshment, and noticed the landlord had two very deformed legs. Presently he said: "Are you not Dr. Michôd of Longreach?" On my replying in the affirmative, he lifted up the worst of the deformities and said: "Oh, you are the doctor who set my leg!" I hastily swallowed my drink and left the town.

Practice in central Queensland, particularly as far as Longreach is concerned, has changed enormously during the last twenty years. When I first commenced practising, transit was per horse or buggy, very tedious and very hard. Frequently on carrying out a long-distance call, one found the patient had died before arrival, and people knowing the difficulty in obtaining medical assistance speedily, refrained from making a call. Motors improved matters, but the aeroplane has altered the situation entirely. One can fly to, and what is more important, land at every town and nearly every homestead in central Queensland. Many homesteads, realizing the advantages, have prepared proper landing grounds for light aeroplanes. Winton, which was 126 miles by road from Longreach, I have visited on many occasions. By horse it was a hard work proposition, and the trip there and back occupied the best part of a week; by motor it usually broke into two days, but now by aeroplane it takes a little over an hour and is as refreshing as a trip to the sea-shore, which is particularly noticeable on coming down at the end of the trip to the hot dry earth.

I was called during the motor car period to Windorah, two hundred miles by road from Longreach, for a case of *ante partum*

hæmorrhage in a *multipara*. It was wet weather and the rivers were up, but I accomplished the trip in twenty hours by motor car, to find that the woman had delivered herself and was still alive, though very exsanguinated. Fortunately the condition could not have been a central *placenta prævia*, though it was probably a lateral one.

If an aeroplane had been available I could have reached this patient in a little over two hours.

I attended a midwifery case in rather unusual, though very sanitary, surroundings, having been summoned to a dam-sinker's camp which was established twenty miles away from the homestead, on Bimerah station. Bimerah is about ninety miles from Longreach. I found a bedroom erected on one of the drays and everything was much cleaner and more convenient than many of the bedrooms in the city. My custom was to travel with a fairly complete outfit and I usually took a trained nurse with me. I always attended to the confinement on the spot, and in miscarriage cases, emptied the uterus; then placing the patient in a reclining position took her back to Longreach in the back seat of a large touring car. This is a safer method than attempting to move the patient, with some of the products of conception retained, as I know of one patient who died of hæmorrhage during transit, even though a doctor was present. It is easier to remove a piece of placenta in a house or a tent than it is by the roadside.

In central Queensland trachoma was always present. The Department of Public Instruction effected a great improvement on this condition by employing a whole-time ophthalmic surgeon to travel round the country, inspecting the schools and standardizing the treatment. When I first went to Longreach there were quite a number of adults with evidence of the severity of the infection, or the lack of treatment that existed in the old days. Numerous patients exhibited scars, the result of ulceration and there were a few in whom a panophthalmitis had developed with complete disorganization. These patients dated their history back to childhood. Now that the disease is treated in the earlier stages, these complications do not develop, though there is still plenty of work in dealing with pannus and entropion.

After the late Dr. Douglas Rodgers of the Department of Public Instruction made his first tour of the country in 1912 or 1913, he arranged that each school should be personally inspected by the local medical man once a quarter and a report of the condition of the children's eyes sent to the Department in Brisbane. The children's parents were notified through the head teacher and were advised to see that their children were made to attend for free treatment. Great improvement was the result.

It is most unfortunate that owing to the financial strain existing at the present moment the Department has seen fit to stop this work. It is a question whether better educational attainments are compensated by defective eyesight, and whether it would not be wiser to cut down the vote for actual education and retain the medical service. I consider that a child with good eyesight and less education is more likely to make a success in the world than is a child in the opposite condition; in fact, defective eyesight renders efficient education more difficult and time is wasted in the process.

The opinion I have formed of the children's eye question is that nearly every year, usually during the fly season, an epidemic of acute conjunctivitis occurs, all sorts and conditions of the people becoming infected, but more particularly the school children. If this attack is efficiently treated, the eyes soon recover without any disability, but if treatment is neglected, a few may eventually develop trachoma, possibly from infection from the few genuine trachoma cases that exist in the town. I am of the opinion that the trachoma-coccus has a very slight infectivity to the healthy conjunctiva, and only infects the conjunctiva in which the resistance has been lowered, as a result of prolonged simple conjunctivitis. Consequently it would be of great assistance in the control of this condition to be able to enforce treatment and to be able to isolate the trachoma patients compulsorily, by sending them to the Hostel in Brisbane or elsewhere. The change to the coast would benefit the general condition of the child and expedite a cure.

It is surprising that tetanus is practically never seen in the human being in central Queensland. I saw only two cases of tetanus during the whole period I was in the west. One was a doubtful diagnosis and the other followed a dental extraction by a travelling dentist who had recently come from the coast. Tetanus is very common on the coastal side of the Dividing Range, and although compound fractures contaminated with black soil, and the usual number of lacerated wounds were common, tetanus never developed. A further curious fact in this respect is that a certain paddock on Maneroo Station, twenty-eight miles from Longreach, had a bad reputation as far as tetanus was concerned, in so much that nearly every horse that was injured in this paddock developed tetanus and died.

Typhoid fever would develop somewhere in the district nearly every year. After a long period of observation I have formed the opinion that the toxæmia produced was more severe than in patients seen on the coast. This is possibly due to the fact that owing to long distances the patient usually arrived late for treatment. The epidemics could latterly be nearly always traced to "carriers" living with a shearing plant; these plants are moved from station to station.

One year a severe epidemic broke out on a station outside Longreach where a travelling shearing plant was being worked on a portion of the run; this portion of the run had never been used before, the shearers lived in tents, and water was brought in tanks from the homestead. By ascertaining the names of all the men working on the plant and tracing back to where they had been working before, I found that one of the hands had suffered from a severe attack of typhoid fever in Winton during the previous year. Since then at two other sheds in which this man had been working, typhoid fever had developed. This man was brought into Longreach and proved to be a carrier.

I believe that if the names of all shearers and shed hands working with shearing plants were forwarded to the Commissioner of Public Health at the termination of each contract, he would frequently be able to locate a carrier.

Some of the hospitals were badly equipped, but the majority have been greatly improved of late years, and there are many well equipped theatres attached to the country hospitals of central Queensland. Little details might not be approved of by

men fresh from metropolitan hospitals, but given a good operating table, an efficient sterilizing outfit and a non-absorbent floor, very good results may be obtained. I found sheet lead the best floor covering, as "Fama" and any form of concrete placed in a wooden building will not stand the movement which always takes place and invariably cracks. Large plate glass windows are unnecessary; it is much more important to have windows which can be opened, as ventilation is very important. The best aspect is the south side of the building, and south-west rather than south-east, this aspect being quite cool in the morning. A top-light can be placed on the southern roof, particularly if it is sunk in a well. Fly gauze is absolutely necessary over every aperture.

I remember doing a trephine operation one night in a well built theatre for a head injury and after the dura had been opened, several small white moths dropped into the wound; they were, however, apparently sterile, no suppuration occurred and the patient recovered. This theatre had been fitted with fly gauze, but a ventilator in the roof had been forgotten, and the operation being done at night, insects were attracted by the light in thousands.

In conclusion, I consider that medical experience in a country town is very enjoyable. In order to succeed, a man should be well trained in midwifery and in diseases of children. On commencing practice he should use his discretion, and should not be on the lookout for theatrical surgery. He will find that the average inhabitant of the country will not take a doctor on his face value, but will watch him, as a rule, for about a year. Once he is accepted, the utmost confidence is placed in him, sometimes to an embarrassing extent. They have no interest in operations, as operations, and are concerned only in the final result. A perfectly executed operation with a fatal termination does more harm than a large number of successes. I know that one of the objections is the danger of getting behind the times, but nowadays post-graduate courses are much more easily available than they were, so that this danger is becoming minimized. Another fear is the danger of falling out with one's medical *confrères*. "Give and take" is necessary on both sides, so are strict observation of the ethical rules of the Association, and a deaf ear to the remarks made by patients and their friends.

Finally, I must thank you all for putting up with this non-scientific conversational address, and I should like to take this opportunity of thanking the other members of the Council for assisting me in getting through my year of office. Times have been bad, the overdraft of the Branch, like the overdraft of many of us, has increased, but there are signs of improvement taking place, and I trust that the ensuing year will be more prosperous for all of us.

COLLAPSE THERAPY IN THE TREATMENT OF PULMONARY TUBERCULOSIS.¹

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THE normal tissues of the body react to invasion of the tubercle bacillus by the formation of a granu-

¹ Read at a meeting of the South Australian Branch of the British Medical Association on August 27, 1931.

loma. This granuloma consists of granulation tissue and its function is to enclose and to destroy the bacilli. When it has completed this work, it becomes converted into fibrous tissue and remains as a scar. When the general and local conditions are unfavourable, the granuloma is unable to overcome the bacilli which multiply and the granulation tissue increases at the expense of the surrounding tissues. After a time the blood supply of the tumour becomes inadequate and the central parts undergo fatty degeneration which is followed by caseation and liquefaction. When this process goes on within the lung the liquefying mass sooner or later opens into a bronchus and a cavity is formed.

The two essentials in the treatment of tuberculosis are the improvement of the general condition of the patient and the provision of rest for the affected part. If the battle against the bacilli is successful, part of the lung becomes occupied by the fibrous tissue. A constant tendency of this fibrous tissue is to contract, and this leads to a diminution in the volume of the organ. This diminution is compensated for principally by changes in the surrounding walls and by changes in the lung itself. The changes in the surrounding walls show themselves as retraction of the ribs, displacement of the mediastinum and its contents towards the affected side and elevation of the diaphragm. Diminution in the volume of the lung is compensated partly by emphysema in the unaffected parts, but the retraction of the fibrous tissue tends to form a secondary bronchiectasis. It is possible for a cavity to drain out completely and dry up, but there is always the danger of re-infection; and if there is any stagnation of the secretions, there is always secondary infection with pyogenic and saprophytic organisms. The extent of an encircling zone of pneumonic consolidation around a cavity is an indication of the virulence of the secondary infection.

Sanatorium treatment aims at improving the general power of resistance of the body and provides functional rest of the lung as a result of body and postural rest. This is quite sufficient to bring about a recovery in a large proportion of early cases, if the patient can be persuaded to continue it for a sufficiently long period. To the ordinary sanatorium treatment may be added tuberculin injections or injections of the gold salts which aim at killing off the bacilli as well as stimulating the resistance of the tissues by the formation of fibrous tissue.

When the disease has advanced to a more extensive infiltration with cavity formation, something beyond ordinary sanatorium treatment must be given in the vast majority of cases. It is for these cases that the various types of collapse therapy are used.

Morrison Davies⁽¹⁾ points out that treatment is most effective when based upon a full pathological interpretation of the clinical state:

Treatment may be required:

- (a) To improve the power of resistance to the tubercle bacilli.
- (b) To place the granuloma under conditions most favourable to its success.

- (c) To compensate for the mechanical disabilities which have developed as a result of the fibrosis. To prevent the development of bronchial distortion and dilatation, or, if already established, to neutralize their deleterious influences. To obliterate cavities.
- (d) To prevent, if possible, secondary infection, or if present, to reduce absorption of toxins.
- (e) To control hæmorrhage and guard against its recurrence.
- (f) To abolish or diminish the distress which may be occasioned by certain symptoms.

The same method of treatment cannot possibly be beneficial to every stage and every type of tuberculous disease of the lungs. Medical methods will be suitable for some cases, while surgical interference is indicated in others. These methods of treatment are not alternative schemes and the physician and surgeon must collaborate.

R. A. Young⁽²⁾ says that:

A great responsibility rests upon the physician or the practitioner in choosing a surgeon. . . . This question raises an interesting speculation whether this branch of medical work is likely to develop a type of specialist worker who will deal with thoracic disease from all aspects—that is, both diagnostic and therapeutic—by regimen, medicine, or operation. Some of the pioneers in this field have conformed to these conditions like Brauer, Saugman, Gravesen, and Morrison Davies, and their names stand high in the roll of achievement.

Four methods of operative collapse of the lung have passed beyond the experimental stage and are now generally accepted as of established value: (i) Collapse of the lung alone by artificial pneumothorax, (ii) collapse of the lung and of the chest wall by thoracoplasty, (iii) local collapse of the lung and of the parietal pleura-extrapleural pneumolysis, (iv) phrenicotomy or evulsion of the phrenic nerve producing paralysis of the diaphragm.

ARTIFICIAL PNEUMOTHORAX.

Artificial pneumothorax is the most valuable and the most widely applicable method of producing collapse of the whole or of the greater part of one lung. The treatment should be used before destructive lesions are established and before adhesions prevent satisfactory collapse of the lung.

Indications.

Every patient should be observed for a period of one to three months before any form of surgical treatment is instituted. There are two exceptions to this rule and those are patients with severe or repeated hæmoptysis and those with cavity formation or bronchiectatic dilatation, when there can be no hope of a cure except by some form of temporary or permanent collapse. As long as one lung is comparatively healthy, a tuberculous lesion of the other lung which is progressing in spite of careful sanatorium treatment, must be regarded as an indication for artificial pneumothorax.

Chronic fibrocaceous types are the most favourable for this form of treatment. Provided the collapse is satisfactory it is possible to obtain good results in active advancing cases of caseous pneumonic and caseous bronchopneumonic types of tuberculosis. In unilateral cavity cases the sooner the pneumothorax is established the better.

Bilateral pneumothorax is indicated when a pneumothorax has been established on one side and

the contralateral lung shows signs of progressive disease.

A spontaneous tuberculous pneumothorax should be converted into a controlled artificial pneumothorax. Tuberculous pleurisy with effusion should be treated by replacing the fluid with air and an artificial pneumothorax should be maintained according to the indications of the underlying disease.

Matson⁽³⁾ regards hæmoptysis, whether slight or severe, as an indication provided it is possible to determine from which side the blood comes. In his opinion artificial pneumothorax should be utilized earlier than is customary.

Contraindications.

Renal and cardiac failure, extensive emphysema or severe asthma are absolute contraindications. Tuberculosis of the larynx, provided the epiglottis is not ulcerated and interfering with the nutrition of the patient, is not a contraindication and is often influenced favourably by a satisfactory collapse. Tuberculosis of the intestines is an absolute contraindication though this is not a universal opinion.

The Matsons feel:

That disease in the contralateral lung plays a much less important rôle in estimating the prognosis of an artificial pneumothorax case than the type of the disease and the character of the pneumothorax. Even the presence of active disease in the contralateral lung does not contraindicate artificial pneumothorax treatment provided it is not too extensive or of an active infiltrating or rapidly advancing type.

A patient whose tuberculosis is complicated by pregnancy, should be submitted to abortion before the third month, but if she is seen in the later months, an artificial pneumothorax should be established and maintained. Marshall⁽⁴⁾ advises emptying the uterus up to the second month. He quotes Rist's paper⁽⁵⁾ published in *The British Medical Journal* in 1927 in which Rist shows that 50% of 52 women with tuberculosis who became pregnant were dead within two years.

Dangers of Artificial Pneumothorax.

The two chief dangers of artificial pneumothorax are syncope from pleural shock and air embolism. The former can be avoided by anæsthetization of the parietal pleura. I always infiltrate the skin with 1% "Novocain" and then gradually anæsthetize all the layers down to and including the parietal pleura.

In order to lessen the risk of air embolism some operators use carbon dioxide for the initial filling. If this gas should enter a blood vessel it would rapidly combine with the blood. It is important to ask the patient to keep quite still while the pneumothorax needle is being introduced. The most frequent first sign of air embolism is a little twitching of the face or an involuntary movement of one arm. The patient may complain of a sudden blindness or develop a hemiplegia. The symptoms depend on the localization of the air bubble. Some complain of feelings of paræsthesia in the legs and small red spots appear under the skin.

Provided no gas is allowed to enter till there are free negative vibrations on the manometer, this accident should not happen. A negative pressure

which rises with each inspiration shows that the needle is in the lung. A small negative pressure with inspiration and a small positive pressure with expiration shows that it is in a cavity. A constantly increasing positive pressure indicates that the needle point is in the lumen of a blood vessel and blood will soon appear in the glass tube above the needle.

A third danger is infection of the pleural sac and this can be avoided by careful attention to asepsis.

Complications of Artificial Pneumothorax.

Matson, Matson and Bisaillon⁽⁶⁾ state that:

Serous exudate occurred in practically every case at some time during pneumothorax treatment and in 30% it was present in quantities of 50 c.cm. or more.

A small effusion seems to do no harm and lengthens the period between the refills. Professor W. Neumann of Vienna⁽⁷⁾ states that he has been able to reduce the number of effusions by combining tuberculin injections with his pneumothorax treatment, and by giving large refills at longer intervals instead of small fills frequently. Using Neumann's method, effusion has occurred in five of my last twenty-five cases.

Mediastinal hernia occurs more frequently on the left side than on the right and is usually due to a positive intrapleural pressure. The treatment is to reduce the pressure till the mediastinum becomes more rigid.

Surgical emphysema has occurred twice in this series of twenty-five cases.

Pain is usual after the initial filling, but does not last long and usually does not recur with the subsequent treatment unless adhesions are present. Before the initial filling I give an injection of 0.01 gramme (a sixth of a grain) of morphine sulphate and 0.43 milligramme (one hundred and fiftieth of a grain) of atropine sulphate. This lessens the apprehension of the patient, reduces cough and post-operative pain and minimizes the risk of pleural shock. Effusions are more common in cases complicated by adhesions and they frequently lead to an obliterative pneumothorax.

The last complication to consider is obliteration of the pleural sac which occurs most frequently when adhesions are present, when there is an effusion and when too long an interval occurs between the refills. The most satisfactory treatment is to replace the pneumothorax by an oleothorax.

Adhesions.

The success of pneumothorax treatment depends largely upon the number and character of the adhesions present. In the Matsons' series of 600 cases there was no free pleural space in 120. In those cases in which pleural adhesions did not prevent a satisfactory closure of cavities or adequate functional rest of the lung, 48% of patients made clinical recoveries; 18% had the condition arrested; 12% were improved or unimproved; and 22% were dead. In a second group of cases in which adhesions did prevent adequate functional rest or satisfactory closure of cavities, 11% of patients were clinically well; 12% had the condition arrested; 19% were improved or unimproved and 58% were dead.

The only certain method of telling whether there is a free pleural space or not is by an attempt to produce an artificial pneumothorax. Neither the clinical examination nor the radiological report can give this information with any degree of accuracy. The so called "tenting" of the diaphragm is not produced by the pull of adhesions but by the sinking of the muscle into a collapsed area in the lung. (Figures IX and X.)

It is permissible, by using slightly increased pressures, to attempt to stretch or even rupture fine pleural adhesions. This increased pressure should be applied very gradually and more or less continuously by making the refills at short intervals. Rupture of an adhesion is usually followed by the appearance of a pleural effusion. The use of high intrathoracic pressures is seldom successful and is extremely dangerous.

In 1913 Jacobæus proposed the division of adhesions by means of the galvano-cautery. The operation is known as closed intrapleural pneumolysis. A specially designed thoroscope is introduced through one point in the chest wall and a cannula through which the electrode of the cautery is passed, is introduced through another point. In the selection of the cases the operator must be satisfied that the adhesions are preventing a satisfactory collapse of the lung, that the patient will recover if the collapse is made satisfactorily and there must be a sufficiently large pneumothorax space to allow of the free manipulation of the instruments. Perhaps most of all, the adhesions must be of the right type. String, cord and band adhesions are suitable for this treatment, but only very experienced operators should attempt the division of fold adhesions. Ralph Matson⁽³⁾ has improved on this method by using a high-frequency current. He uses the new Bovey electrosurgical unit and finds it ideal. In the last five years he has done 268 operations in 206 cases. There was only one death in the series due to a spontaneous pneumothorax which happened seven days after the operation during a paroxysm of asthma. In 70% it was found possible to convert an unsatisfactory into a satisfactory pneumothorax. The complications were severe hæmorrhage, three times; high fever, seven times; and pulmonary fistula, four times.

EXTRAPLEURAL PNEUMOLYSIS.

Extrapleural pneumolysis consists in the separation of a part of the lung together with its adherent visceral and parietal pleura from the ribs and chest wall. The part which is thus separated is usually kept collapsed by the use of some "filling" such as fat, muscle or paraffin. It is used to cause collapse of large or stiff walled cavities and is most useful in the upper part of the thorax. It can be used alone or as a supplementary operation to thoracoplasty.

It is a smaller and much less dangerous operation than thoracoplasty and is best suited for isolated cavities near the apex or front part of the upper lobe. Its great advantage is that most of the unaffected part of the lung is not made to collapse. Sauerbruch and Brunner⁽⁸⁾ have pointed out that it is necessary to have the cavity fairly empty of sputum as otherwise there is danger of aspiration.

Other disadvantages are that in freeing the parietal pleura the finger might enter the cavity in the lung. Again, the "filling," being a foreign body, might set up a reaction in the tissues, resulting in the formation of an effusion which might become infected and later lead to the formation of a sinus through which the "filling" will be extruded. If the "filling" is not placed directly over a cavity but with a bridge of healthy lung tissue between it and the cavity wall, there is not much danger of the filling working its way into the cavity (Denk⁽⁹⁾). Care should be taken not to introduce too large a "filling", as it can cause considerable displacement of the mediastinum and its contents.

Indications.

The chief indications are to control a hæmorrhage into a cavity in the upper lobe when a pneumothorax is not possible and the patient would not stand the major operation of thoracoplasty. Davies writes⁽¹⁰⁾:

It is only in rare cases that this operation offers any advantage over a thoracoplasty of the upper three or four ribs. The type of case in which, however, it is eminently suitable is that with bilateral lesions, active, localized to the apices, and with a cavity on one side; especially if that cavity is responsible for the majority of the symptoms.

There is a tendency for the paraffin plug to move downwards towards the diaphragm. Denk⁽⁹⁾ using a paraffin plug made according to the formula of Baer,⁽¹¹⁾ reports the result in thirty cases. Three of the patients had two plugs on the same side and one had a bilateral operation. There were seven early and late deaths, four patients developed trouble in the lower lobe, the trouble in three being due to pneumonia and in one to tuberculosis. The remaining three patients died of progressive tuberculosis. One patient is untraced and in six the operation is recent. Of the remaining sixteen, in two as the result of this operation alone and in two in which a thoracoplasty was performed as well, healing has occurred; eight patients are improved and in four healing has not taken place. Denk considers these results to be unsatisfactory and analyses the grounds of failure. Pulmonary complications and progress of the disease were frequent either because the cavity remained open, especially if it were situated near the hilus, or because on account of great thickening of the pleura it was not possible to make the operation extensive enough and there was the danger of injuring the lung or of tearing into the cavity. Also there were the later affections of the lower lobe. Wandering of the "filling" down towards the diaphragm and suppuration of its bed defeated the object of the operation.

PHRENICOTOMY AND EVULSION OF THE PHRENIC NERVE.

Although Sauerbruch⁽¹²⁾ first performed simple phrenicotomy on animals in 1904 to facilitate the resection of the œsophagus, it was not till 1911 that Sturtz,⁽¹³⁾ of Cologne, proposed it for the treatment of severe unilateral tuberculosis of the lower lobe of the lung. Up to 1914 twenty-six patients had been operated on by Sauerbruch and were examined Röntgenologically by Walther⁽¹⁴⁾ who, after a careful study, discovered that only five showed a permanent paralysis, and less than 50% showed the characteristic

paradoxical movement. In 1922 W. Felix⁽¹⁵⁾ published the results of an anatomical research on the phrenic nerve and it was after this that the operation received renewed attention. Felix explained the return of function following simple phrenicotomy by demonstrating that in fully 25% to 35% of all persons anomalies of the phrenic nerve existed in the form of accessory fibres which usually join the main stem of the nerve below the site of resection suggested by Stuerz and that they therefore continue to innervate the diaphragm. This work was confirmed by Ralph Matson and Plen⁽¹⁶⁾ and they showed that evulsion of the phrenic nerve is dangerous in some cases while in others the nerve would not be found at all by the ordinary method of surgical approach as it does not always cross the *scalenus anticus* muscle.

Accessory fibres arise most commonly from the fifth cervical nerve either near or with the nerve to the subclavius. Other accessory fibres may also spring from the third, fourth, sixth, seventh, eighth cervical or even the first thoracic nerve. In order to interrupt impulses coming from accessory branches as well as any communicating cervical sympathetic fibres of the phrenic nerve, Felix proposed an "exairesis" of the nerve after having cut it, by winding it round a haemostatic forceps and withdrawing it. Ray Matson⁽¹⁷⁾ states:

One may feel confident of complete interruption of all impulses if 10 or 12 centimetres of nerve have been evulsed.

Harold Wilson⁽¹⁸⁾ is satisfied with the removal of a much shorter length of nerve. He states:

The paralysis is permanent in every patient in whom more than 2.5 centimetres of the nerve has been evulsed.

This has not been my experience and Matson says that if less than ten centimetres of nerve is removed, a return of diaphragmatic function can be expected in about 25% of cases.

Goetze⁽¹⁹⁾ objected to the "phrenicus exairesis" of Felix believing that there was danger of damaging important vascular structures or tearing into important structures in the mediastinum. As a means of overcoming these objections, he proposed resecting a small section of the phrenic nerve and then overcoming accessory impulses by resecting a small section of the nerve to the subclavius, as well as all accessory fibres between the phrenic and the cervical nerves.

The operation of choice is the evulsion of the nerve, but if a complex type presents itself or if there is undue resistance to evulsion, then the operation should be turned into a radical phrenicotomy after the method of Goetze. The operation can be produced on both nerves without producing any undue breathlessness.

Although evulsion of the phrenic nerve is a minor operation it is not without danger. Tearing into the subclavian vein, injury to the thyrocervical trunk, air embolism following injury to the internal jugular vein have all been reported. Damage to the vagus, to the sympathetic and the *recurrens* nerves have occurred several times and injury to the thoracic duct is not uncommon.

Wilson⁽¹⁸⁾ reported that dyspnoea was increased in seven patients out of forty-nine, and two developed digestive disturbances.

Effect on the Diaphragm.

After the operation, if adhesions or thickened pleura do not prevent it, the paralysed hemidiaphragm immediately assumes the expiratory position and is seen on fluoroscopic examination to be motionless on quiet breathing. On deep inspiration it will rise in the thorax and descend on expiration. This is the "paradoxical movement" described by Kienbock.⁽²⁰⁾ The most sensitive and easily applied test is that described by Hitzenberg, of Vienna. It is known as the "sniffing test," the patient being told to sniff and the paralysed half of the diaphragm rises into the thorax while the other half descends.

The paralysed hemidiaphragm continues to rise for some months after the operation. As the muscular tissue atrophies and the scar tissue in the lung contracts the diaphragm continues to rise for a year or more.

Effect on the Lung.

According to Brunner's⁽²¹⁾ experiments the lung volume can be reduced by not more than a sixth to a third of its volume. The results of the induced paralysis are due more to the ascent of the diaphragm and the amount of collapse of the lung than to the rest afforded by the paralysis. The best results are seen in those cases with a maximum rise of the diaphragm and the poorest results are in those in which the ascent is small. The capacity for collapse of diseased lung tissue is greater than that of normal lung tissue. This capacity is most marked in proliferative or fibrotic disease, but is also present in lungs affected with the exudative type of tuberculosis. This opinion is in accord with that of Ray Matson who says that over a period of years he has noticed that in patients undergoing pneumothorax therapy the diseased part of the lung is collapsed, while the healthy lung tissue remains expanded and often in contact with the chest wall. Wilson, however, says that the exudative type of tissue does not collapse as well as normal tissue.

The effect of the paralysis of the hemidiaphragm is not confined to the base of the lung, but can affect the upper lobe as well and cavities in this situation are seen to be smaller than before the operation. Goetze, Bachmeister and Zadek are quoted by Alexander⁽²²⁾ as having noticed this and it occurred in three cases of the present series. If, however, the lower or middle lobes are adherent, there would not be much effect on the upper lobe.

Clinical Effects of Paralysis of the Diaphragm.

Within a week or two the temperature, the cough, the pulse, the amount of sputum and the general condition are often greatly improved. The reduction in the fever and the improvement in the general condition are said to be due to the blocking of the lymph channels and consequent stagnation of the lymph stream as the result of the collapse and rest provided to the diseased lung tissue, thus inhibiting the absorption of the tuberculotoxic products (Matson⁽¹⁷⁾).

Not only is the amount of sputum reduced, but in several cases tubercle bacilli disappeared and most of the patients found it easier to expel their

expectoration after this operation. This is because the abdominal muscles used in coughing are able to act more efficiently through the paralysed diaphragm. Cough due to diaphragmatic irritation is abolished and in the opinion of Morriston Davies, the risk of vomiting, if an attack of vomiting occurs immediately after a meal, is greatly lessened. Alexander⁽²³⁾ writes:

Even if the diaphragm is bound down by adhesions and kept from rising into the chest and relaxing the lung, phrenicotomy sometimes succeeds, through stopping the movements of the diaphragm, in checking hæmoptysis.

This applies especially to early cases of bronchiectasis with soft-walled cavities in the lower lobe. I had one patient operated on for this reason and he ceased spitting blood within a week of the operation.

Indications.

I shall confine my remarks to the indications in cases of pulmonary tuberculosis in which it can be used in both chronic and acute conditions. The ideal cases are those which are predominately unilateral, but as the operation throws very little strain on the contralateral lung, this reservation need not be adhered to as strictly as for artificial pneumothorax and far less strictly than for thoracoplasty.

Firstly the indications are the same as those for artificial pneumothorax in which it has been impossible to find a free pleural space and in those for whom, owing to social or economic reasons, a full course of pneumothorax treatment is impossible. In these cases a beneficial result can be obtained, even if the disease is limited to the upper lobe. It is certainly a great aid in arresting disease at the base of the lung.

It should be used for the relief of symptoms when adhesions to the dome of the diaphragm cause a distressing cough, when pericardial adhesions give rise to tachycardia and dyspnoea and where fibrosis has produced displacement of the mediastinum.

The indications in conjunction with artificial pneumothorax and with thoracoplasty require consideration.

With Artificial Pneumothorax.

The indications for phrenic evulsion in conjunction with artificial pneumothorax are as follow:

(a) When adhesions exist between the base of the lung and the dome of the diaphragm preventing satisfactory collapse of the lung.

(b) In some cases it lengthens the intervals between refills.

(c) It is thought to check the occurrence of pleural effusion.

(d) Where there is a threatened early obliterative pneumothorax it should be used in conjunction with oleothorax to maintain collapse.

(e) For persistent hæmoptysis which is not checked by pneumothorax because the part that is bleeding is held open by adhesions.

(f) Towards the end of a course of pneumothorax treatment when one has to deal with an originally very extensively diseased lung. It diminishes the capacity of the hemithorax to accommodate a lung which has been shrunken by scar-tissue changes,

thus lessening the danger of (i) reexpansion of excavated areas, (ii) secondary bronchiectasis, (iii) retraction of the heart and mediastinal contents. (Matson,⁽³⁾ Alexander.⁽²⁴⁾)

(g) To reestablish collapse when artificial pneumothorax has had to be abandoned before the lung is quite healed.

(h) To lessen the area of pyogenic membrane in cases of empyema complicating pneumothorax.

Wilson⁽²⁵⁾ does not consider that the claims of Bordet⁽²⁶⁾ that phrenic evulsion lessens the incidence of pleural effusion have been supported by any large series of cases. Alexander quotes Sauerbruch, Baer, Zadek and Zeigler as finding fewer and smaller effusions when pneumothorax and phrenicotomy are combined.

Supplementary to Extrapleural Thoracoplasty.

The phrenic nerve should be evulsed in every case before a thoracoplasty because in a certain number of cases the improvement will be so complete that the subsequent major operation will not be necessary. The general condition of the patient will be so improved in favourable cases that the operative risk will be reduced. Not only is the patient able to expel his sputum more easily, but the amount is reduced and so there is considerably less danger of aspiration. The ascent of the diaphragm into the hemithorax produces some collapse of the lung and so lessens the number and the amount of ribs that should be removed at the subsequent operation. Sauerbruch⁽²⁷⁾ frequently uses phrenicotomy as a "test" operation to determine whether or not suspicious lesions in the better lung are actively tuberculous. Matson does not accept the result with "blind faith":

A study of our material indicates that one cannot accept with blind faith the result of a phrenicotomy as a "test" operation, since we have seen a contra-lateral lung lesion withstand the "test" operation but exhibit activity following a thoracoplasty. We have also observed an essentially negative contra-lateral lung exhibit the disease following a "test" operation but pass through a complete thoracoplasty undamaged, although the excavated area was essentially the same before each procedure.

Denk and Domanig⁽²⁸⁾ did this "test" operation eight times, but do not look on it as a satisfactory test.

Morriston Davies gives two other indications for this operation:

An unresolved pneumonia will, not infrequently, in the course of years, lead to the development of bronchiectasis. The rise of the dome, allowing collapse of the base of the lung and compensating for the shrinkage of the fibrous tissue, is likely, therefore, to prevent the onset of this more serious change. The same argument holds good for cases with long-standing basal effusions with fibrosis of the lower lobe. In both circumstances, therefore, phrenic evulsion should be done as a prophylactic measure.

In this series of cases the operation was performed thirty-one times. Twenty were combined with thoracoplasty, two were done when the lung was expanding after a course of pneumothorax treatment, two for bronchiectasis, and seven as an independent operation in cases in which it was not possible to do a thoracoplasty. Of the eleven patients whose operation was not combined with thoracoplasty one is dead from progress of the disease, in seven healing

has occurred, one is improved and two are unimproved.

As this series is so very small I should like to give you the results from the Department of Thoracic Surgery conducted by Dr. Ralph and Dr. Ray Matson and Dr. Bisailon and from the Surgical Clinic at Graz conducted by Professor Wolfgang Denk.

I shall quote directly from a report by Dr. Ralph Matson⁽³⁾:

The value of an induced hemidiaphragmatic paralysis in those types of tuberculosis wherein a pneumothorax is impossible and a thoracoplasty is contraindicated is unquestioned, according to our experience. In a series of 34 cases of the productive type of tuberculosis, predominately unilateral, wherein a thoracoplasty was contraindicated because of the presence of active or progressive disease in the contralateral lung, we have obtained most gratifying results. 52% were much improved and 38% were improved. In 44% the sputum became negative for the tubercle bacillus. The 52% rated as "much improved" improved so markedly that a thoracoplasty became unnecessary. All of these patients made clinical recoveries.

In another group of 32 cases of essentially unilateral pulmonary tuberculosis, wherein a pneumothorax was impossible and a thoracoplasty was indicated, we have observed almost equally gratifying results. 35% of these patients were much improved, 28% were improved. All patients rated as "much improved" are capable of making a clinical recovery. In 40% of the above cases, the sputum became negative to the tubercle bacillus. In 35% of these cases the patient so improved that a thoracoplasty became unnecessary.

Denk and Domanig report on an even larger series.⁽²⁹⁾ One hundred and forty-two patients were submitted to this operation and of those operations 66 were combined with other collapse operations. Of the remaining 76 patients, 48 were so severely ill that they did not allow of any collapse therapy. Their outlook was extremely bad and operation was performed only at the very urgent request of the patient. None died of the operation, but 29 died of the original disease, in none did healing occur, four were improved, six were unimproved and the others were not traced. Denk and Domanig are of the opinion that in these cases of severe bilateral disease in which it is not possible to do a thoracoplasty or a paraffin "filling" one cannot obtain a good result with the exaeresis alone. Twenty-eight patients were in a relatively favourable stage of the disease and gave much better results. In eight the operation was combined with artificial pneumothorax. Of these eight, in two full healing occurred, two improved, in two healing was not complete and two were not traced. Of the twenty without pneumothorax ten were improved, in six healing did not occur and four were not traced.

EXTRAPLEURAL THORACOPLASTY.

The object of extrapleural thoracoplasty is to cause permanent collapse of the lung. Its indications are the same as those for artificial pneumothorax, but its contraindications are more definite, as less liberty can be exercised in regard to the condition of the other lung. There should be no evidence of active disease on the opposite side, nor should there be much evidence of fibrous change. Especially should the region of the hilus be free from any disease which is likely to interfere with the proper aeration of the healthier lung.

It is only in rare cases that thoracoplasty is an alternative operation to artificial pneumothorax.

Where it is possible to produce a satisfactory pneumothorax, that is the operation of choice. But Claus, quoted by Davies, puts it epigrammatically:

A good pneumothorax is better than a thoracoplasty, but a good thoracoplasty is better than a bad pneumothorax.

An attempt should be made in every case to produce an artificial pneumothorax before the major operation is considered. The two big things against thoracoplasty are the immediate dangers of the operation and the impossibility of allowing the collapsed lung to reexpand should trouble start on the other side.

The most suitable cases are those in which the disease is essentially unilateral, of a proliferative or fibroid type, with or without cavity formation. The results in the exudative type of the disease are not so satisfactory. The "proliferative" type is characterized by retraction of the chest, and the heart, the mediastinum and the trachea are pulled over to the diseased side and the diaphragm may be drawn upwards. By X rays the lesions are seen to be dense and compact and sharply marked off from the surrounding lung tissue. The "exudative" type of lesion does not exert traction upon neighbouring structures; it is somewhat similar to a lobar pneumonia or a bronchopneumonia. By X rays the lesions are seen to be patchy and confluent, to be irregular in outline and to fade away into the surrounding pulmonary tissue instead of having sharply defined borders. Clinically the two types are usually mixed, one or the other predominating. The prognosis in the proliferative type is good because there is a tendency towards fibrous encapsulation of the diseased tissue. In the exudative type no such tendency is present, and this type of disease makes the lung rather stiff and non-compressible. In this type results of operation are often bad. Some years ago Denk's death rate in the two groups was 14% for the proliferative type and about 40% for the exudative. Brunner⁽³⁰⁾ analysed 116 cases from the Sauerbruch Clinic with respect to the two types of tuberculosis. Of 67 patients with the proliferative type only 10% had died; in 49 the lesions were predominately exudative and 43% died. Ralph Matson⁽³¹⁾ regards the exudative types of pulmonary tuberculosis as unsuited for thoracoplasty.

When the lung is only partly collapsed by a pneumothorax, especially when it is the base that is collapsed, some surgeons are content to do a partial thoracoplasty to bring about collapse of the remainder of the lung and to retain the partial pneumothorax. With this procedure Davies⁽³²⁾ does not agree, but the Matsons and Denk have had good results.

In cases of fibroid phthisis limited to one side with cavity formation and dilatation of the bronchi a much quicker result is obtained with thoracoplasty than with pneumothorax. In many of these cases the result appears satisfactory till the lung is allowed to reexpand, when it is seen that the disease has not been arrested. Either the pneumothorax treatment must be continued indefinitely or collapse of the lung must be permanent.

Another indication for thoracoplasty in this small series was tuberculous pyothorax secondary to artificial pneumothorax. It was present in three of the twenty-two cases. It was Sauerbruch who

worked out the correct method of treatment. It is best not to treat the pythorax by thoracotomy, as it is liable to leave a fistula which makes the subsequent operation more difficult. The effusion should be removed by aspiration, which can be repeated many times, and the cavity washed out with weak iodine solution, with Dakin's solution or with a solution of "Gomenol". After aspiration the first or upper and then the second or lower stage of a complete thoracoplasty should be done. Sauerbruch prefers to operate first and aspirate the exudate of the mixed infection only after the wound has quite healed. I saw one tragedy accompany this operation as there was a bronchial fistula and the patient was drowned with his own pus while under the anæsthetic. This could have been avoided by injecting some dye such as methylene blue into the exudate and watching for its appearance in the sputum.

Selection of Cases.

R. A. Young⁽³³⁾ in his remarks at Winnipeg, pointed out that we have no very definite method of assessing the patient's capacity for standing the operations which we advise in cases of thoracic disease. In order to test the heart and the lungs we have nothing comparable with the renal function tests.

At present we have to rely more upon a careful clinical review of the patient's general condition, taking into consideration factors like age, physique, temperament, blood pressure and the general nutrition . . . The ultimate decision rests rather upon "clinical instinct".

Age. Patients between fifteen and forty-five stand the operation best. Those over sixty have a very bad prognosis.

Age of the Disease. Most important is the age of the disease, for if it is of long standing, it is likely that the heart will be damaged. Some cases are not operable after a very short time; these show an absence of any tendency to heal. Long standing cases of pythorax might be complicated by amyloidosis.

Disease of Other Organs. Tuberculosis of other organs is not always a contraindication. According to Denk and Domanig tuberculosis of one kidney, of the ileo-caecal region, of the larynx and of bones are not contraindications. They give as absolute contraindications:

Bad general condition, severely disturbed heart action, quickly progressive exudative forms of disease, especially caseous pneumonia disease of many organs, extensive bowel disease, bilateral kidney disease, severe amyloidosis, severe emphysema of the "other" lung, and over sixty years of age.

In the present series two died of progressive tuberculosis of the bowels and one, who had an ulcerated larynx in which the epiglottis was severely involved, succumbed within six months of the two stage operation.

Extrapleural Paravertebral Thoracoplasty.

I shall leave to Dr. Leonard Linton the description of the Wilms-Sauerbruch and the Brauer operations and shall just mention in passing the necessity for removing the rib right back to the tip of the transverse process, the importance of "bedding in" of the

Scapula and the need for arranging the removal of the pieces of rib to be as near the cavities as possible.

An interesting piece of research has recently been published from the Surgical Department of the University of Graz.

A complete transverse section was made through the middle of the thorax of a cadaver. Two cavities, one anteriorly and one posteriorly, were punched out of the lung tissue. A piece of rib was then removed as in paravertebral thoracoplasty. When the ends of the ribs were now brought together, it was seen that the posterior cavity was obliterated but there was no effect on the anterior one. Some rib was now removed close up to the sternum and when the ends were brought together the anterior cavity was closed.

This proves the necessity of so planning the operation that the portions of rib removed will be over or very near the cavities to be closed. Also it shows how important it is before the operation to localize accurately the cavities. If the cavities have stiff walls, then it is necessary not only to cause collapse of the lung, but to compress it and it is under the place where the piece of rib is removed that the greater compression takes place.

If the cavity is situated towards the front of the lung or near the hilus, then it is necessary to do a Brauer subscapular operation. It sometimes happens that the cavities are not closed by the ordinary paravertebral operations and then it is necessary to do a supplementary operation. Extra pieces of rib can be removed through a vertical incision down the axilla, through a horizontal subclavicular incision or the ribs can be freed from their costal cartilages according to the operation of Wilms.⁽³⁴⁾

Anæsthesia.

The first thoracoplasties I saw performed were done under local anæsthesia and I was amazed at the endurance of the surgeon and of the patients who, although they did not seem to suffer much pain, were rather breathless and had to be kept constantly supplied with oxygen during the last half hour of the operations. Between 1925 and 1930 I saw a tremendous improvement in the administration of anæsthetics in Austria. These operations are now done under nitrous oxide and oxygen anæsthesia. Sometimes it was combined with "Avertin". Denk reports having used this with excellent results in 10 cases. It cannot be used in every case because there is a certain amount of danger of aspiration during the long period of unconsciousness. The quantity used was 0.06 to 0.08 gramme per kilogram body weight and Denk would never allow this to be exceeded.

Owing to the presence of a long standing infection these patients are very subject to shock; the right heart has had to do extra work for a long time owing to a displaced mediastinum or pleural adhesions. So it is necessary to choose an anæsthetic which will not produce shock easily and which will not throw too much added burden on to an already overworked heart. It is also necessary to use an anæsthetic from which the patient will wake quickly and some surgeons do not like the cough reflex abolished.

Denk and Domanig report having used local anæsthesia in 305 cases and in 254 it was satisfactory. They have made a very interesting comparison between their post-operative complications following

local anaesthesia alone and those following a combination of local and general anaesthesia:

Post-operative pneumonia; specific or unspecific—	
Combined local and general anaesthesia	No complications.
Local anaesthesia alone	4.6% of cases.
Severe post-operative shock—	
Combined local and general anaesthesia	4.8% of cases.
Local anaesthesia alone	9.0%.
Dissemination in the healthier lung—	
Combined local and general anaesthesia	No cases.
Local anaesthesia alone	15 cases.

In the twenty-two cases of this series operated on by Dr. Lindon general anaesthesia was used, either nitrous oxide and oxygen or ethylene and oxygen. The latter gives an excellent relaxation and allows a large percentage of oxygen to be administered throughout the operation.

The Matsons and Bisaillon tried operating under local anaesthesia and soon gave it up as unsatisfactory. For five years they have been using a combination of local and general anaesthesia and for the past year have been using "Sodium amytal" administered intravenously as a preliminary hypnotic. It is used only for patients with a normal blood pressure and in good general condition. Morphine sulphate 8.0 to 11.0 milligrammes (one-eighth to one-sixth of a grain) and atropine sulphate 0.43 milligramme (one-one-hundred-and-fiftieth of a grain) are given one half hour before the operation. "Sodium amytal" is then used, from seven-tenths to one grain per ten pounds of body weight. They have never used more than fifteen grains of "Sodium amytal" and have had no unpleasant results from its use.

Results.

In 1925 Alexander published the results among 1,159 patients operated on by thoracoplasty. In 36.8% the disease was healed; in 24.4% there was improvement; in 38.75% there was no benefit or the patient died. Morrision Davies' figures are even better: Group I, 52%; Group II, 18%; died, 30%.

When the figures of all the collapse operations are compared, it will be seen that, roughly, in one-third healing has occurred, one-third of the patients are improved and one-third are unimproved or dead.

Alexander in 1925 attempted to find out what proportion of tuberculous patients were suitable for surgical therapy. He gave some widely varying figures: Saugman and Madinier 4% to 8%; Ziegler, exclusive of phrenicotomy 20%; the Matsons and Bisaillon 8.5%. He sums up by saying:

I believe that with conservative choice of cases, 3 to 5 per cent. is a more exact figure for unselected groups of tuberculous persons.

The Matsons' latest figure is 20%.

When going through my last hundred cases of tuberculosis for the preparation of this paper I was surprised to find that I had recommended some form of collapse therapy in fifty-one. As this was so very different from any of the figures I had seen quoted, I then went through the previous fifty cases and found that twenty-five of the patients had been given similar advice, so I came to the conclusion that my patients were not exactly unselected because they came to me after some years of medical treatment had

failed to give them relief and in order to find out if some kind of collapse therapy would not improve their condition.

Of this hundred cases forty-nine received ordinary medical treatment such as rest *et cetera*, tuberculin or injections of gold salts. Twenty-five had artificial pneumothorax, two being bilateral. Two had artificial pneumothorax, *plus* exaeresis of the phrenic nerve. Six had exaeresis of the phrenic without any other collapse therapy. One had a partial thoracoplasty without evulsion of the phrenic nerve. Seventeen had thoracoplasty *plus* exaeresis of the phrenic.

Results of artificial pneumothorax:

Healed, 12; improved, 11; unimproved, 1; dead, 3.

Results of 22 thoracoplasties:

Deaths, immediate, that is, within few days of operation..	4
" late	7
Total	11
Unimproved	1
Improved	3
Healed	7
Total	11

The first operation was performed at the end of May, 1928, and this series shows a death rate of 50%. Sixteen of the patients had very advanced disease and would have been dead in less than two years if the operation had not been performed. Eight of them belonged to the exudative group. Of these three are living with healed wounds and five are dead. In most of these cases I agreed to advise operation only at the urgent request of the patients or their relatives. Three of the four cases of pyothorax are amongst the "healed and improved", the remaining patient is not improved.

We can often learn much more from our failures than from our successes and I wish to analyse the causes of death and post-operative complications.

Causes of Death.

Flapping Mediastinum. Flapping mediastinum was the cause of death in one case nine days after operation.

When the patient was returned to bed from the theatre his pulse was found to be fast and he was short of breath. He soon became cyanosed and had to have oxygen more or less continuously. On examination the lower ribs on the operated side (his was a partial thoracoplasty, the upper eight ribs having been resected) were seen to be drawn in with every breath.

This is an expression of a yielding mediastinum and is especially dangerous. To a very large extent this can be prevented by using a very tight bandage which keeps up continuous pressure on the operated side of the thorax but does not constrict the other side. Great care should be taken when dressing the wound that this bandage is not allowed to go slack without continuous pressure being kept on the lower ribs. The result of this flapping of the mediastinum is to produce a severe degree of heart failure.

Disturbance of the Function of the Heart. Disturbance of heart functions was the cause of an early death in one case. Operation on the right side produces this more often than on the left. Probably this is due to pressure on the mouths of the *vena cava*. In many cases the myocardium is damaged

ILLUSTRATIONS TO THE ARTICLE BY Dr. H. W. WUNDERLY.

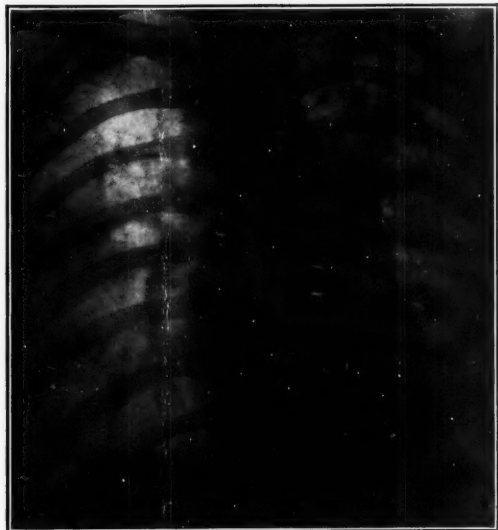


FIGURE I.
Before induction of artificial pneumothorax.



FIGURE II.
After pneumothorax was established. In spite of the failure to cause collapse of the upper part of the left upper lobe, the result was satisfactory.

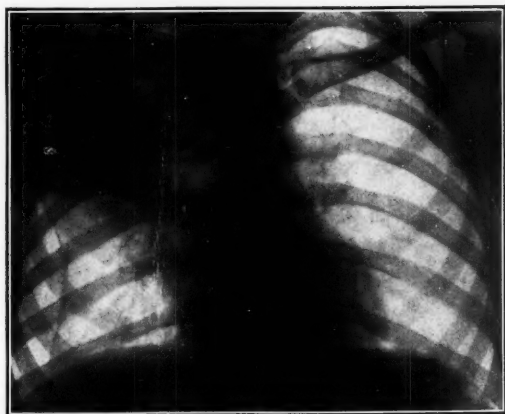


FIGURE III.
Localized artificial pneumothorax on the right side. It was impossible, by this means, to cause collapse of the upper lobe. Subsequently this patient was submitted to paravertebral thoracoplasty with a successful result.

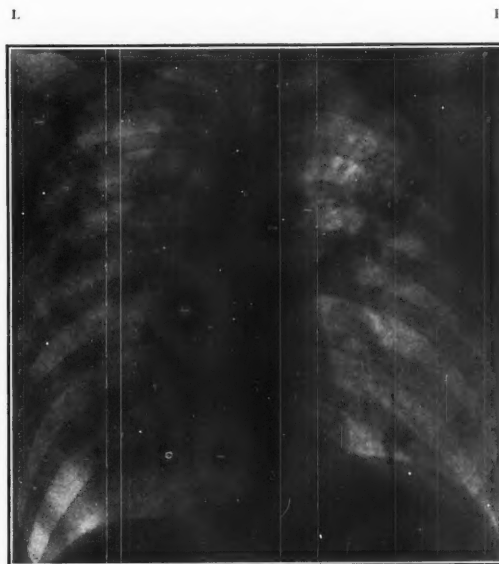


FIGURE IV.
Partial artificial pneumothorax on the left side. Extensive cavitation of the left lung with active disease of the right upper lobe.

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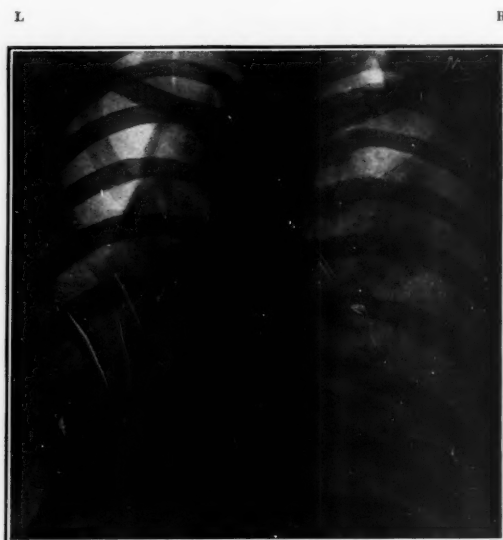


FIGURE V.
Partial bilateral artificial pneumothorax. The right upper lobe has a thin cord-like adhesion extending out to the thoracic wall. The unaffected middle and lower lobes are relatively unaffected by the pneumothorax. This is an example of "selective collapse".



FIGURE VI.
A later stage of the same case of bilateral artificial pneumothorax.

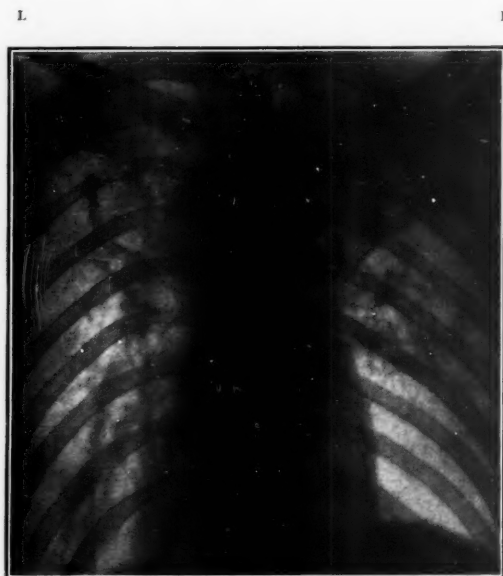


FIGURE VII.
Cavity in the right upper lobe. It was impossible to induce an artificial pneumothorax.

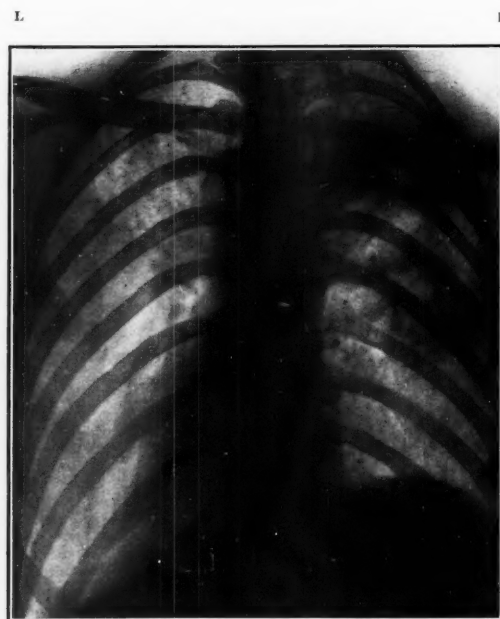


FIGURE VIII.
Same case after exsufflation of the phrenic nerve. Good ascent of the diaphragm. The cavity in the right upper lobe has almost disappeared. Very little effect on the displacement of the trachea. Good clinical result.

ILLUSTRATIONS TO THE ARTICLE BY DR. H. W. WUNDERLY.

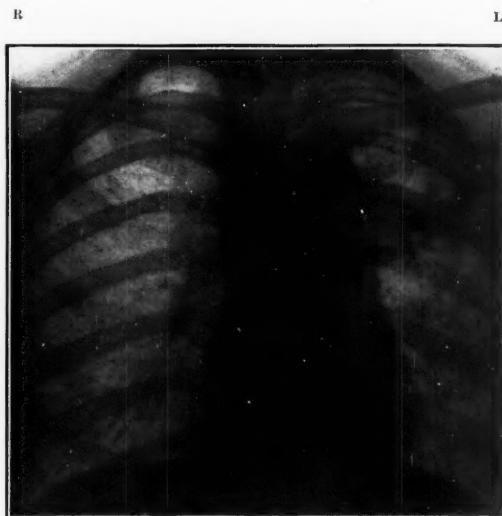


FIGURE IX.

Extensive cavities in the left lung. Well marked "tenting" of the diaphragm which was not due to adhesions as can be seen from Figure X.

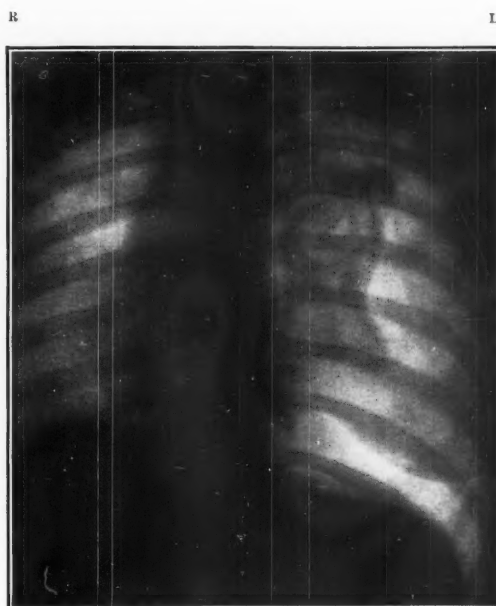


FIGURE X.

An unsatisfactory pneumothorax. The cavities remained uncollapsed, but there were no adhesions between the base of the lung and the diaphragm.

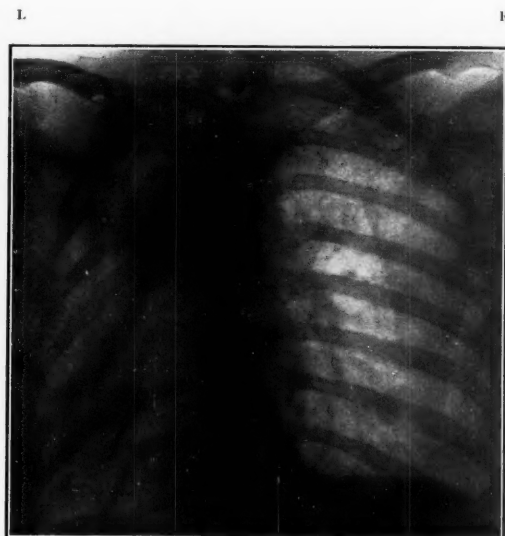


FIGURE XI.

Same case after an unsuccessful thoracoplasty. The ribs were not removed up to the tip of the transverse processes and the cavities were not collapsed. This patient developed ulceration of the epiglottis and died six months after the operation.

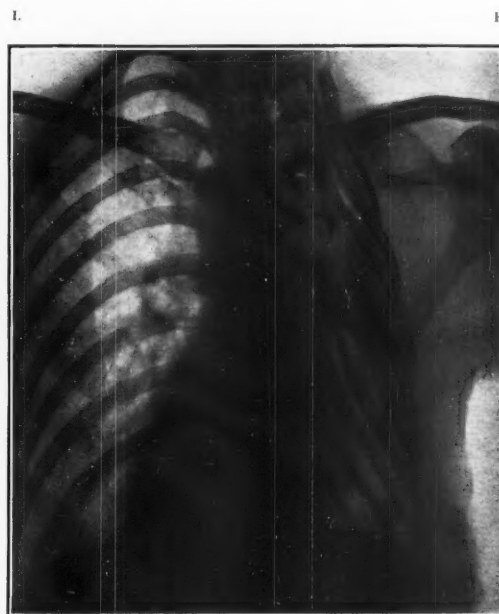


FIGURE XII.

A successful thoracoplasty. There is good drooping of the ribs and satisfactory reduction in the size of the hemithorax. The phrenicotomy was not successful.

ILLUSTRATIONS TO THE ARTICLE BY DR. H. W. WUNDERLY.



FIGURE XIII.
Large cavitation in the right lung, pneumothorax not successful.

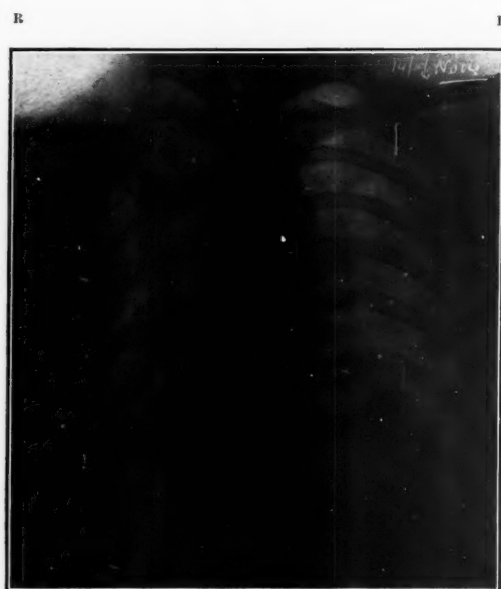


FIGURE XIV.
Same case after thoracoplasty. A very good result. No cough, no sputum, rapid gain in weight and ability to do a full day's work.

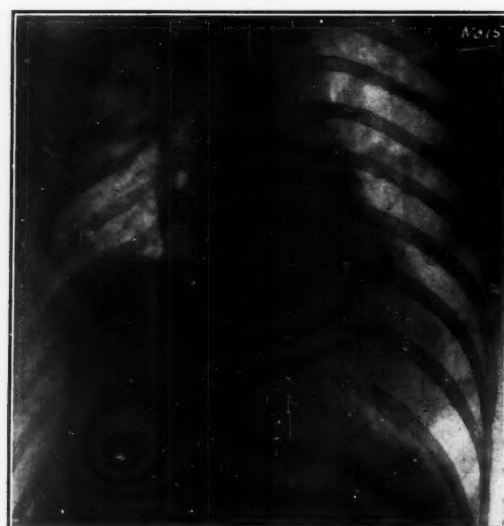


FIGURE XV.
Same case, illustrating good ascent of the diaphragm.

by long standing disease and by the pressure on the lung a large amount of tuberculotoxic substances is suddenly liberated into the circulation. There is no functional test for the heart and it is difficult to predict how it will stand up to the operation. The condition of the patient can be improved by intravenous infusion of glucose given continuously and such drugs as caffeine and ephedrine are useful in the after treatment.

Post-operative Lung Complications. Pneumonia of the lower lobe in the unoperated lung was the cause of death in one case. For a long time it was thought that this was due to the aspiration of infected material from the compressed lung and it was considered safer to operate on the lower ribs first to lessen the risk of aspiration into the base of the operated side. Alexander says that the cause of post-operative lung complications is the stagnation of the secretions. Before the operation the patient should be told the dangers of not getting rid of the expectoration and in the first hours everything possible should be done to make coughing easy. Repeated doses of morphine and firm pressure over the site of operation are of considerable assistance. By freezing the intercostal nerves the post-operative pain can be reduced.

Wound Infection. Wound infection, combined with poor general resistance, contributed largely to the remaining early death.

The ribs were not removed to the tip of the transverse process and the posterior rib stumps protruded through the wound which broke down. Enormous bed sores and a large cavity which I overlooked in the unoperated lung completed the picture.

This was the only case in which troublesome wound infection occurred. Bacteria have been found wandering around in the extrapleural tissues, having travelled through the parietal pleura and in those cases with marked oedema of the chest wall it is thought that breaking down after the operation is very liable to occur.

Late Deaths. Two of the patients died of progressive tuberculosis of the bowels many months after operation. From the cases I have seen I would advise against operation in any patients suffering from any degree of intestinal tuberculosis. Denk, speaking from a very extensive experience, says he would not regard ileo-cæcal tuberculosis as a contraindication.

Extension of the Disease. The remaining five patients succumbed to an extension of the disease in the contralateral lung. In two of them the disease was of the exudative type.

When Willy Meyer⁽³⁵⁾ commenced performing extensive operations on patients with bronchiectasis, he had the advantage of a visit from Professor Friedrich. Friedrich's advice was to be very conservative in the selection of cases otherwise bad results might make unpopular what was really a very great advance in surgery. This present series of cases shows an immediate operative mortality of two, with another two deaths within the first two weeks. Within two and a half years another seven had died making a mortality of 50%. Against this there are seven whose lungs are healed, three improved and one unimproved. When the first operation was done in 1928 it was a new procedure

as far as Adelaide was concerned and only patients with extremely advanced conditions presented themselves. In a number of them it was a last hope and I advised the operation really against my better judgement, but I wanted to give them a chance to be cured.

I hope it will not be long before more suitable patients are referred to the surgeon. It is a mistake to wait too long till the heart is damaged and the patient's condition deteriorated. Good results are not obtained with very large cavities and very thickened pleura. Sir P. C. Varrier-Jones⁽³⁶⁾ in his Mitchell Lecture at the end of 1929 published a graph which shows that Australia heads the world in the incidence of advanced cases of pulmonary tuberculosis in its sanatorium population. This is sufficient excuse for me to bring before you the results of these methods of treatment. If we see a patient with pulmonary tuberculosis early enough we should never allow a cavity to develop. If cavities are already present when the patient is first seen, then, provided the condition of one lung is satisfactory, some method of collapse therapy should be adopted to obliterate the cavity, and an unsatisfactory method should not be continued when it is seen that it cannot possibly give a satisfactory result.

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SOME NOTES ON THE USE OF THORACOPLASTY IN PULMONARY TUBERCULOSIS.¹

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I HAVE been requested to supplement Dr. Wunderly's paper by a few remarks on the operation of thoracoplasty, use of which has been made in twenty-two of the cases quoted by him in his paper. In every case the operation chosen has been Sauerbruch's paravertebral extrapleural thoracoplasty, and the operation has been performed, in various cases, in one, two or three stages. In all cases phrenic avulsion was performed, either at a preliminary operation, or was combined with a small first-stage rib-resection.

Pre-Operative Preparation.

Even in a robust patient, the resection of from six to eleven ribs would be attended by considerable shock; it will be readily understood that the debilitated condition of these patients demands that every effort should be made to minimize the effects of operative shock. All patients, even if ambulant, should be rested in bed for two or three weeks, and should be given the fullest diet they can tolerate, specially of glucose and carbohydrates. Cardiac stimulants are given, if there be evidence of serious myocardial involvement. Several nights of sound sleep should be made certain for them, as it is likely that their sleep will be very restless and broken for some nights after operation.

Probably no single factor plays a more harmful part in the production of shock in these cases than a cold operating theatre. The adequate resection of even six ribs will probably take at least forty minutes, and the exposure of these patients to a low temperature for that period imposes a severe handicap upon them. The temperature of the theatre should not be below 23.8° C. (75° F.). In some North American clinics the temperature was maintained at 29.3° C. (85° F.) by steam heating, which made for the greater safety of the patient, to the discomfort of the onlooker.

Anæsthesia.

The tendency in most Continental and American clinics is to abandon local anæsthesia in this operation, in favour of ethylene or gas and oxygen. In this

series the operation was attempted only once under "Novocain", but it had to be finished under gas-oxygen, owing to symptoms of "Novocain" absorption. In one other case, the third stage was performed under light ether anæsthesia; otherwise, in every case, ethylene and oxygen was the anæsthetic employed, and it is undoubtedly the most suitable for this work.

Posture.

It is essential that the patient should endeavour to empty the contents of the cavities immediately before coming to the theatre. In the earlier cases of this series, reported in this journal in 1929, much attention had been paid to the question of position of the patient on the table, in endeavouring to prevent any flow of secretion into the sound lung, by operating with the affected lung lower than the sound one. But it was since noticed that the Continental and American surgeons did not hesitate to place the patient with the affected lung uppermost, and this has since been adopted without any appreciable ill effects; and it certainly makes the operative procedure much easier.

Operative Technique.

Time does not permit of a detailed description of the various incisions for each stage; suffice it to say that some form of J-shaped incision is used which will permit of a wide retraction of the scapula, and which will at the same time allow a free exposure of the ribs to the transverse processes of the vertebrae.

The number of stages required depends on the site of the lesions and the fitness of the patient. The one-stage operation, with resection of the upper eight ribs, was reserved for patients in good condition with the lesions confined to the upper lobe, and was performed only twice in these cases.

In one instance, with probably the most dramatic result of the series, a three-stage operation was performed on a very debilitated patient with extensive involvement of the left lung. The stages consisted of the resection of ribs eleven to eight, seven to four, and three to one respectively, at intervals of ten days.

If the patient's condition will stand it, not more than three weeks should elapse between stages, as the ribs regenerate very rapidly, and will prevent a successful total collapse. In the two-stage operation it is generally considered best to deal with the upper six ribs first, and with the ribs seven to eleven at the second stage.

It is scarcely necessary to mention the extreme importance of hæmostasis; there is bound to be appreciable oozing from the incised muscles, rib ends and rib bed. And no vessel which can be tied should be ignored. These patients can ill afford blood loss; and a dry wound greatly lessens the risk of wound infection and delayed healing, which delays the performance of subsequent stages.

Much time may be saved, or lost, by the method of rib-stripping; after the initial incision of the periosteum, the upper border should be stripped from behind forwards, and the lower borders from before backwards, so that the beak of the raspator is always directed into the angle formed by the attachment of the external intercostal muscles to the ribs. The ribs will then strip quickly and cleanly.

¹ Read at a meeting of the South Australian Branch of the British Medical Association on August 27, 1931.

In the more chronic cases, it is often found that the deep surface of the rib has been drawn in to a point, so that the cross section of the rib is triangular instead of being roughly quadrangular; and extra care is required to prevent perforation of the pleura with the respiratory.

It is sufficient to remove two centimetres of the first rib; one has to be content with less sometimes, but division of this rib is absolutely essential, as otherwise the chest wall cannot fall in and down. Almost as essential is the resection of each rib right back to the transverse process of the vertebra. If this is not done, the lung lying in the vertebral groove fails to collapse and holds up the collapse of the rest of the lung. The ribs are resected as far forward as possible, as much as fifteen centimetres of the middle rib being removed. After the removal of the ribs, the intercostal nerves are injected with 80% alcohol, which lessens greatly the post-operative pain. The muscle layers are closed by continuous catgut suture through the muscle sheaths, and the skin by interrupted silk-worm gut and horsehair sutures. The wound should always be drained for twenty-four to thirty-six hours by a rubber tissue drain brought out of the lower end, to prevent the formation of a hæmatoma.

A big dressing, applied with pressure, gives welcome support to the site of operation, and, what is more important, it diminishes the tendency to mediastinal flutter, and may be needed for some weeks.

On return to bed, the patient is kept as upright as possible to aid expectoration, with pillow pressure behind the affected side and the arm supported. After the division of the first rib there is often a good deal of pain from traction on the brachial plexus, and elevation of the arm on a pillow will relieve this. Morphine should be given freely, in doses which will diminish the pain without abolishing the coughing reflex, as it is very desirable that the patient should empty his cavities, and the increased production of sputum which often follows the collapse for a few days renders this all the more necessary.

The final results are by no means mutilating, and the patients have recovered full use of their arms. The mortality rate of 50% in this series is very high; but in every case the patient was *in extremis* and rapidly going down hill, all other methods of treatment having failed to arrest the downward progress. And that some of these patients are alive and improved, and in some cases back at work, three years after thoracoplasty is sufficient argument that this treatment should not be denied to any patient in whom the lung cannot be made to collapse by any other method.

SOME OBSERVATIONS ON BROMIDE THERAPY AND INTOXICATION.

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BROMIDES were first discovered by Balard in 1826,⁽¹⁾ and introduced especially into therapy by

Graf in 1840. Since that date they have been widely used as therapeutic agents in all branches of medicine. In order to prove the relative frequency of administration, Mr. Alexander Mutch of Messrs. Drysdale, Limited, Brisbane, has kindly analysed for us two hundred consecutive prescriptions dispensed at the pharmacy and he finds that bromides are the third commonest ingredient, and by far the commonest of the toxic drugs.

Considering these facts it is surprising that so little has been written in Australian literature, although European authorities have reported many cases of bromism which have been fully commented on by Diethelm in his article.⁽¹⁾

Pharmacology.

Funk⁽²⁾ states that bromides are depressants of the nervous system and circulation, and are powerful hypnotics, lowering the activity of the cortical motor area and that of the brain as a whole. The excessive use of potassium bromide produces degeneration of the cortical cells beginning at the periphery of the dendrons. Bromides lower the reflex excitability of the spinal cord and impair the functions of the peripheral nerves and sensory apparatus, causing anaesthesia of the skin and of the mucous membranes. They depress the muscular system by direct action on the muscles themselves, as well as by their action on the nerves supplying them. The potassium salt is directly paralytic to the heart, lessening the force and frequency of its contractions and finally stopping it in diastole. Bromides lessen arterial tension and body temperature, depress sexual appetite and power, cause pallor and emaciation, a coated tongue, disordered digestion, foetid breath, acne on the face and extremities, somnolence, dysphagia, sluggish reflexes and defective coordination. If their use is long continued, they may even impair the mental faculties, producing hallucinations in some cases, in others melancholia with suicidal tendency; also incompetence of the sphincters and paralysis beginning at the periphery and extending to the centres. On the other hand maniacal excitement may sometimes arise.

A modern tendency has been to give large doses, such as 9.0 grammes (one hundred and fifty grains) a day for three or four days and then to reduce the dose to 0.9 to 1.2 grammes (fifteen to twenty grains) a day. The rationale of this treatment will be understood when some of the cases to be described are explained. (*Vide* rapid absorption.)

Objects of the Investigation.

The objects of our investigation were: (i) Provision of data as to frequency, ease of production and common symptoms of bromide intoxication. (ii) The determination of absorption and excretion time and of the optimum concentration of bromides in the blood.

The report is based on ninety-two estimations of blood bromide on thirty-seven individuals who had had bromide medication. Control estimations were made on a further twenty persons, all of whom showed a uniform absence of bromide in the blood.

Method of Estimation.

Estimation was carried out by two methods: (i) quantitative, in the blood; (ii) qualitative, in the urine.

The quantitative method adopted by Diethelm,⁽¹⁾ that is, the Walter method, with Hauptman's modification, was used by us and was performed as follows:

To two cubic centimetres of serum add four cubic centimetres of distilled water and 1.2 cubic centimetres of 20% trichloroacetic acid. Shake well, stand one-half hour and filter. To two cubic centimetres of filtrate add 0.4 cubic centimetre of 0.5% of gold chloride (in distilled water). This is either compared against Buerke's colorimeter or a specially prepared solution. Determine sodium bromide content with the formula:

$$\frac{20 \times \text{standard mgm. NaBr}}{\text{Reading of serum}} = \text{mgm. NaBr 100 c.cms. serum.}$$

In order to be independent of the colorimeter dilute a stock solution containing 143 milligrammes of sodium bromide to 100 cubic centimetres of water, and add one cubic centimetre of 20% trichloroacetic acid and one cubic centimetre of 0.5% solution of gold chloride to 5 cubic centimetres of the standard stock solution. Serum absorbs a certain amount of the bromide and this amount increases with the concentration of the bromides.

A percentage is also absorbed in the precipitated proteins; but this is small and as the readings of the bromide concentration are taken only in twenty-fives, it is sufficiently accurate for clinical purposes. However, standards prepared in the manner described practically eliminate even this trivial error.

0.5 c.cm. of stock solution, diluted to 10 c.cms. = 25 mgm. standard.
1.0 c.cm. of stock solution, diluted to 10 c.cms. = 50 mgm. standard.
1.5 c.cms. of stock solution, diluted to 10 c.cms. = 75 mgm. standard.
2.0 c.cms. of stock solution, diluted to 10 c.cms. = 100 mgm. standard.
2.5 c.cms. of stock solution, diluted to 10 c.cms. = 125 mgm. standard.
3.0 c.cms. of stock solution, diluted to 10 c.cms. = 150 mgm. standard.
3.5 c.cms. of stock solution, diluted to 10 c.cms. = 175 mgm. standard.
4.0 c.cms. of stock solution, diluted to 10 c.cms. = 200 mgm. standard.
4.5 c.cms. of stock solution, diluted to 10 c.cms. = 225 mgm. standard.
5.0 c.cms. of stock solution, diluted to 10 c.cms. = 250 mgm. standard.
5.5 c.cms. of stock solution, diluted to 10 c.cms. = 275 mgm. standard.
6.0 c.cms. of stock solution, diluted to 10 c.cms. = 300 mgm. standard.
6.5 c.cms. of stock solution, diluted to 10 c.cms. = 325 mgm. standard.
7.0 c.cms. of stock solution, diluted to 10 c.cms. = 350 mgm. standard.
7.5 c.cms. of stock solution, diluted to 10 c.cms. = 375 mgm. standard.

Attempts were made to modify the test by using smaller quantities of serum to eliminate the necessity of venepuncture for obtaining the blood. However, it was found impracticable to employ less than half the stated quantities, this amount giving reliable results.

For the detection of bromides in the urine the method described by Wuth⁽³⁾ was used.

To 25 cubic centimetres of urine about one gramme of animal charcoal is added, mixed well, allowed to stand for a few minutes and then filtered. To exactly five cubic centimetres of filtrate measured into a test tube one cubic centimetre of a 20% solution of trichloroacetic acid and one cubic centimetre of a 0.5% solution of gold chloride solution are added; a brown shade indicates the presence of bromides.

Thirty consecutive specimens of urine were examined for bromides by this method. Positive reactions were checked by blood estimation. In this series there were four such cases (including case 225 and case 125). Patient 225 showed definite toxic symptoms and patient 125 had shown similar symptoms one week previously, since when she had ceased taking the mixture which, she said, caused the symptoms.

Examination of the urine is a simple way of elucidating suspicious symptoms of bromism without the necessity of taking blood. Of course for an accurate determination a blood examination would necessarily have to be performed.

Symptoms of Bromism.

The clinical indications which led to bromide examinations in the following cases were: (i) Somnolence and extreme fatigue with loss of energy and inability to lift the legs. (ii) Staggering gait. Several patients complained of a feeling of "drunkenness" and showed definite Rombergism. (iii) Incoordination of the hands without tremor, and inability to perform the finger nose test. (iv) Disorientation as to place and time. (v) Delusions and hallucinations, especially of hearing. (vi) Inability to concentrate. (vii) Emotional depression and fits of weeping.

It is a noteworthy fact that a rash, usually regarded as a sign of bromism, was seen only once in the cases of intoxication (Case I) and once in the non-toxic cases. The latter was Case XIX (Mrs. L).

This patient when first seen by us had a rash consisting of small itchy papules on the face, forehead, chest and upper part of the back and arms. The patient had been taking 3.6 grammes (sixty grains) of potassium bromide every day for six months and had a blood bromide concentration of 125 milligrammes per 100 cubic centimetres, a figure well below toxic levels.

Frequency of Intoxication.

Wagner and Bunbury⁽⁴⁾ state that of one thousand consecutive patients admitted to the Colorado Psychopathic Hospital, 1.7% sought admission solely on account of intoxication due to bromides. Most of these recovered quickly, but two patients died owing, in the opinion of the investigators, to the indiscriminate use of bromides. Both these patients had been taking bromide under the care of a physician and death could have been prevented had the physician been more familiar with the early symptoms of bromism, or willing to make a blood examination.

In our series we have collected seven patients who had been taking only moderate doses of bromides, and this shows that it is by no means an uncommon factor to be reckoned with in general medical practice and must be watched for continually. The patients under review were collected from those seen at the neurological department and medical out-patient department at the Brisbane General Hospital, and in private practice at the Brisbane Clinic.

Case Reports.

CASE I. Miss C. was seen on May 26, 1931. She had been under treatment by another practitioner for four years during which time she had had much medical treatment. Recently she complained of distressing attacks of giddiness for which she sought advice. A well-marked acneiform rash was present. Diagnosis of bromide intoxication was made and confirmed. The concentration of bromide in the blood was 200 milligrammes per 100 cubic centimetres.

CASE II. J.D. was first seen on November 20, 1930, complaining of pains in the feet, a lump in the right arm, frequent dreams and shaking turns which he was unable to describe accurately, followed by a limp feeling and tingling in the left arm. He was given 1.8 grammes (thirty grains) of potassium bromide every day for four weeks, then 3.6 grammes (sixty grains) every day for two weeks. Seen again on January 2, 1931, he said that until the last few days he had been feeling better than he had for ages. Two days previously he noticed dizziness and a feeling as if he were drunk; he says he was unable to walk straight. No definite ataxia or Rombergism was noticed. The blood bromide was 200 milligrammes per 100 cubic centimetres. The usual treatment was given and the patient was not seen until January 20, 1931, when he felt well again and examination of the blood revealed no bromides. The patient now keeps well on luminal 0.03 gramme (half a grain) twice a day. He expressed the opinion that the increase

in dosage of potassium bromide from 1.8 to 3.6 grammes a day commenced to give rise to the symptoms described.

CASE III. Mrs. A.S. was seen on January 13, 1931, complaining of dizziness and weakness. No abnormality was found in the various systems. She was given ammonium bromide, 3.6 grammes (sixty grains) every day, with much improvement until January 27. She was seen again on February 3, 1931, when she complained of walking as if drunk for one week and of being unable to walk along without catching hold of something; she felt extremely drowsy and had no energy. There was a marked fixity of expression, a slow slurred speech with a prolonged reaction time, marked ataxia and incoordination together with a positive Romberg's sign. Blood bromide at this stage was 225 milligrammes per 100 cubic centimetres. She was then given ammonium bromide, 0.36 gramme (six grains) every day for forty-eight hours; then this was suspended and replaced by sodium chloride, four grammes (one drachm) three times a day in water.

This patient was seen again one week later (February 10, 1931). All the above signs and symptoms had then disappeared and she said she felt really well. The blood bromide was 150 milligrammes per 100 cubic centimetres. A dose of ammonium bromide, 0.9 gramme (fifteen grains) every day, was given. The well-being continued until April 16, 1931, when she had a return of all the symptoms described on February 3, 1931. We had not seen the patient for some weeks and the dose had been increased to 2.7 grammes (forty-five grains) a day during the previous two weeks. A blood examination was not done on this date, but with treatment similar to that used during the previous attack, the condition quickly cleared up. On April 23, 1931, the blood bromide was 100 milligrammes per 100 cubic centimetres.

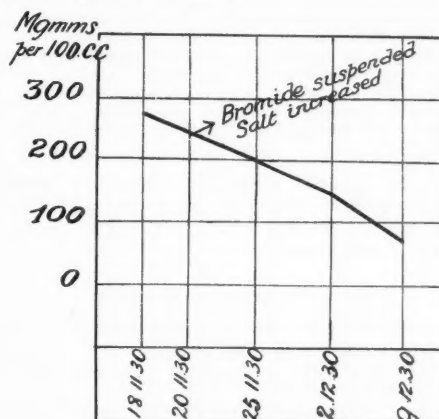
This patient is evidently intolerant of the usual doses of bromide.

CASE IV. Mrs. E. was first seen on November 18, 1930, after having taken 2.7 grammes (forty-five grains) of potassium bromide every day for an indefinite time. She complained of a continuous drunken feeling with inability to walk without bumping into various objects. She had numerous bruises on the arms and shoulders where she had bumped into fences, tables *et cetera*. She was disorientated as to time and space. Several times she had placed a tray in the air instead of on the table. There was definite staggering gait and slow slurred speech. Romberg's sign was present. The bromide content of the blood was 275 milligrammes per 100 cubic centimetres. Given the routine treatment, she showed a gradual loss of symptoms, till on January 6, 1931, when the blood was normal. One week previous to this she asked to have the mixture again as she felt she was unable to carry on without it. She was then given 1.8 grammes (thirty grains) a day, and on February 3, 1931, the bromide content of the blood was 100 milligrammes per 100 cubic centimetres. Seen again on February 16, 1931, and at subsequent dates, she remains well as long as she is taking the mixture; she does not keep to 1.8 grammes (thirty grains) a day, but varies between 0.6 and 1.8 grammes a day. From the graph it will be seen that a month elapsed before the drug was completely eliminated from the blood.

CASE V. Mrs. D. was referred by Dr. A. G. Anderson to one of us (J.B.) on February 3, 1931. At first her condition presented some difficulty in diagnosis. She had had an injury on the head causing concussion, but no fracture. She had been taking bromides, quantity unknown at first, then 3.6 grammes (sixty grains) a day for two weeks. On February 3, 1931, she complained of great drowsiness and lack of energy, noises in the ears and pains across the back and chest. At times she was very confused and felt as though she was bumping into objects which in reality were not there. The provisional diagnosis had been a post-concussional syndrome, but the symptoms were so suggestive of bromism as to indicate investigation. The blood bromide on this date was 250 milligrammes per 100 cubic centimetres. The usual eliminative treatment was given. She was seen again on February 9, 1931, when she felt much better and brighter and complained only of a slight headache. The blood bromide was 200 milligrammes per 100 cubic centimetres.

Patients VI, VII and VIII showed similar signs and symptoms to those described. Patients VI and VIII were taking doses of 1.8 grammes (30 grains) a day for six or seven weeks and Patient VII was taking an unknown quantity.

All the patients described, with the exception of Patient VI, whose dose was not known, developed toxic symptoms on the usual therapeutic doses of 1.8 to 3.6 grammes (30 to 60 grains) a day, given over comparatively short periods.



GRAPH I.

Showing bromide concentration in blood, Case IV. Note the prolonged excretion time.

CASE IX. Mrs. G. belongs to a different category to those above. This patient had not improved under any therapeutic measures, including the usual doses of bromides, so on April 18, 1931, she was given 9.0 grammes (150 grains) of sodium bromide a day.

Seen on April 22, 1931, she stated she felt better and brighter than for some weeks, was sleeping well and altogether much improved. On April 23, 1931, she complained of diplopia, a heavy feeling in the eyes and extreme lassitude. No note was taken of the gait, as she was too weak to stand up. The blood bromide was 225 milligrammes per 100 cubic centimetres. She was given 0.6 gramme (ten grains) of sodium bromide a day for twenty-four hours, then 12.0 grammes (three drachms) of salt a day, still with a small dose of bromide. On April 24, 1931, hallucination of hearing developed—the patient said she could hear people crying and screaming in the next room, or in the house next door, and someone being murdered. She says she had been accused of monopolizing and wasting the nurse's time. At this period she was very depressed and crying frequently. On April 25, 1931, as on April 24, she still had hallucinations. On April 27, 1931, the blood bromide was 200 milligrammes per 100 cubic centimetres; she still had some hallucinations and was certain several murders had been committed in the adjoining house. She could hear people crying out, being locked up for being drunk and disorderly. The bromide was suspended entirely and salt continued. On May 5, 1931, she had no hallucinations and said the disturbing people left two days previously. The blood bromide at this time was 150 milligrammes per 100 cubic centimetres. Her condition was much improved.

There seems no doubt that the bromide intoxication in this patient's case was beneficial, in that for a period it changed the form of the neurosis. Sulphonal *et cetera*, are of course, often used similarly for this purpose. The method, however, should not be employed unless all the facilities for making a bromide estimation are at hand.

Cases IV and VIII serve to illustrate the importance of blood estimations in controlling bromide therapy.

Patient III was taking ammonium bromide, 3.6 grammes (sixty grains) a day, for two weeks with marked improvement. At the end of the third week toxic symptoms developed and the blood bromide was 225 milligrammes per 100 cubic centimetres. Bromide was suspended and salt given reduced the concentration in a week to 150 when the patient was very well. She was given

1.8 grammes (thirty grains) a day and kept well. Inadvertently she was put back on 2.7 grammes (forty-five grains) a day, and in two weeks she again developed toxic symptoms. With a return to thirty grains a day after a week's eliminative treatment she continued to remain well with a blood bromide of 100 to 125 milligrammes per 100 cubic centimetres.

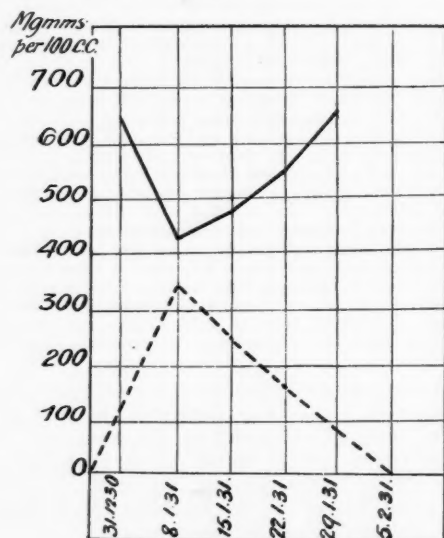
Patient IV also showed definite toxic symptoms and a bromide concentration of 275 milligrammes per 100 cubic centimetres. In six weeks the blood became normal but the patient asked to be put back on the bromide mixture as she said she was unable to carry on without it. So long as the concentration remained in the vicinity of 100 milligrammes per 100 cubic centimetres she remained well, and this was maintained by a dose of potassium bromide, 1.8 grammes (thirty grains) a day.

In these two cases toxic symptoms could be kept in abeyance by controlling the dosage by periodical blood examinations, the level of maximum therapeutic effect in each case being 100 to 150 milligrammes per 100 cubic centimetres.

Ease of Production of Symptoms.

It is very essential for the practitioner to realize how small a dose can give rise to toxic symptoms (Cases VI and VIII). Toxicity depends on ratio absorption. Bromides are rapidly absorbed into excretion. Bromides are rapidly absorbed into the system and slowly excreted by the kidneys, skin, saliva, intestinal and bronchial mucous membranes and the milk when saturation has occurred, after which elimination keeps pace with absorption. When the drug is stopped it takes some weeks before it is completely excreted (Cases VIII, IX, X *et cetera*).

Funk⁽²⁾ states that bromides replace the sodium chloride in the blood, and as the bromide concentration increases, so the sodium chloride percentage diminishes. The reverse happens as the bromide is excreted (see Graph II).



GRAPH II.

Showing blood chlorides and blood bromide in Case XXII. The continuous line represents blood chlorides, the broken line blood bromide.

According to Hatcher and Wilbert as much as 25% of sodium chloride may be replaced by bromides. It is generally accepted that a replacement above

40% is fatal. Toxic limits, however, are reached with a replacement of 20% upwards which represents a blood bromide in the vicinity of 175 milligrammes per 100 cubic centimetres.

When we consider the replacement of the sodium chloride by bromides, it can be understood how important it is to ascertain the patient's salt intake at the time of the administration. A dose toxic to a patient on low salt intake could be harmless and useless to one on a high chloride intake. On questioning patients showing toxic symptoms while taking comparatively small doses, such as 1.8 grammes (30 grains) a day, we found in most of them a lowering of salt intake. In such cases it was due to either a dislike of sodium chloride, as in Case III, but in the majority, was due to a very poor appetite and consequently low food intake, for example, Cases II, I, III and VI. For a comparison four patients on the same diet and all taking 9.0 grammes (150 grains) of bromide a day, were taken. The blood bromide of two on salt increase of 4.0 grammes (one drachm) per day did not exceed 200 milligrammes per 100 cubic centimetres in the week. Cases XX and XXI, the other two, on normal or decreased salt showed in the week a concentration of 375 and 350 milligrammes per 100 cubic centimetres.

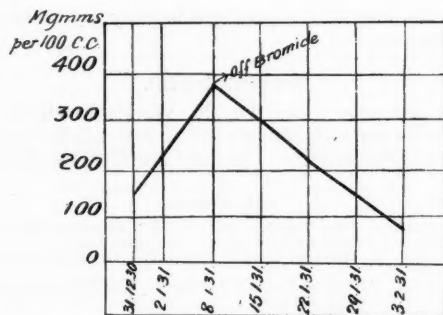
These patients, although well within toxic limits, showed no toxic signs, except some abnormal drowsiness. In one case of marked depression not improving on other treatment, there was a definite improvement in the general condition. After suspending the bromide and as the concentration fell to below 250 the depression became evident again. The patient was then lost sight of and we were unable to establish whether the improvement would continue if the concentration were again increased in the vicinity of 350.

The variability of the individual's salt intake would help to explain why some patients need larger doses than others to gain improvement. For example, Patient XVI, taking 1.8 grammes (thirty grains) per day for six months, has a blood bromide content of 150 milligrammes per 100 cubic centimetres with well marked improvement. Patient XXV, taking 1.8 grammes (thirty grains) a day for six months, has a blood bromide content of only 75 milligrammes per 100 cubic centimetres and was found, owing to mistaking instructions with regard to salt intake, to be taking a large increase of salt, and was not doing well.

The Optimum Concentration in the Blood.

It is obviously important to know the level of blood bromide which gives the best therapeutic results. In our experience it is difficult to assess the benefits from bromide medication with the concentration in the blood.

As with other drugs, the tolerance to bromides varies in different individuals. In many cases levels above 200 milligrammes per 100 cubic centimetres of blood give rise to toxic symptoms; however, the accompanying table shows the variable resistance to the drug.



GRAPH III.

Case XXIII, showing decreased salt intake, the patient receiving 9.0 grammes (150 grains) of sodium bromide each day. Note the rapid absorption and slow excretion.

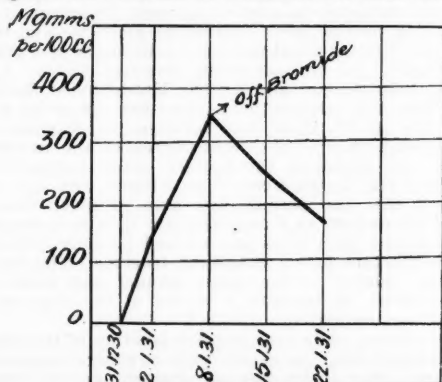
TABLE SHOWING PARTICULARS OF PATIENTS WELL WITH A TOXIC CONCENTRATION.

Case Number.	Blood Bromide, Milligrammes per centum.	Dose of Bromide.
XI	275	4.5 grammes (75 grains).
XII	325	3.0 to 4.5 grammes (50 to 75 grains).
XIII	225	6.0 grammes (100 grains).
XIV	225	—
XXII	350	9.0 grammes (150 grains).

Patients XI and XII are well only when taking large doses and Patient XIV showed definite benefit only when the concentration reached 225 milligrammes per 100 cubic centimetres.

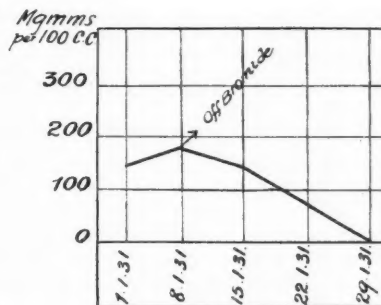
The following patients were well with a non-toxic concentration (the figures in parentheses represent milligrammes of bromide per 100 cubic centimetres of blood): Patient XV (150); Patient XVI (150); Patient XVII (125); Patient XVIII (100); Patient XXIV (125); Patient III (100-150); Patient IV (100-150).

Patient XXIV is of interest in that he had been under treatment by various drugs for some months without benefit. He is now taking bromides and with a blood bromide of 120 milligrammes per 100 cubic centimetres has never been so well for years. As a practical point the drug should be pushed, but very great care should be taken not to miss the early



GRAPH IV.

Case XXII, showing decreased salt intake, the patient receiving 9.0 grammes (150 grains) of sodium bromide each day. Note the rapid absorption and slow excretion.



GRAPH V.

Case XIX, showing increased salt intake, the patient taking 9.0 grammes (150 grains) of sodium bromide each day.

signs of intoxication. The purely routine administration of "Mist. Pot. Brom." is to be deprecated.

Treatment of Patients with Toxic Symptoms.

Wagner and Bunbury⁽⁴⁾ advise against rapid use of chlorides after withdrawal, as this increases the bromide concentration in the blood. We advocate the elapse of two to three days before giving sodium chloride and then the administration of 4.0 grammes (one drachm) of common salt in water three times a day to aid the elimination of the bromide as the sodium chloride replaces the bromide in the blood.

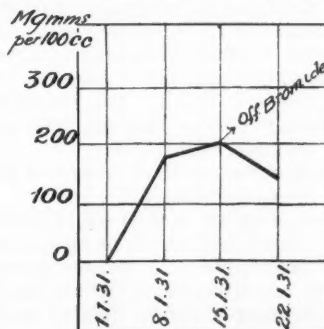
Diethelm stresses the point that sudden cessation is dangerous and may give rise to serious symptoms of acute melancholia or mania.

This was borne out by one of our patients who had been under treatment by another practitioner up to a week before examination (Case VII). She had taken no drugs in the interval. When suddenly deprived of the mixture, she developed extreme melancholia, "frightfully depressed feelings" and some suicidal tendencies—relieved by taking a half dose of the mixture. Examination of her urine revealed the presence of bromides and we then estimated the bromide in the blood; the level was 125 milligrammes per 100 cubic centimetres one week after the patient ceased taking the drug.

Relationship between Arsenic and Bromides.

An attempt was made to correlate the relationship between bromides and arsenic on account of the well-known influence of the latter in preventing a rash.

Patient XII (paraphrenia) had been taking 3.0 to 4.5 grammes (50 to 75 grains) of sodium bromide a day, together with 0.72



GRAPH VI.

Case XX, showing increased salt intake, the patient taking 9.0 grammes (150 grains) of sodium bromide each day.

mil (12 minims) of *liquor arsenicalis* every day for nine months. The blood bromide was 325 milligrammes per 100 cubic centimetres and the patient was considerably improved. There was no rash and no toxic symptoms were present, although the blood level was well within toxic limits and must have been so for some considerable time.

Patient XI had a blood bromide content of 275 milligrammes per 100 cubic centimetres and Patient XIII one of 225 milligrammes per 100 cubic centimetres. Both these patients with blood levels in the toxic zone had no rash and manifested no toxic symptoms and neither had been taking arsenic.

The result in these cases was inconclusive and we intend to watch several others of our patients who are taking relatively large doses over a prolonged period.

Comment.

Although the number of cases under review is not large, there appears to be sufficient evidence to demonstrate the importance of bio-chemical control of bromide medication. It was hoped to include a survey of the relationship between the epileptic fit and blood bromide level. This, however, is incomplete and will be the subject of a future communication.

Attention may be drawn to the fact that certain medicinal preparations containing bromides are sold over the counter without the necessity of obtaining a doctors prescription. "Cream of Yeast" compound tablets contain 0.13 gramme (two and one-quarter grains) of sodium bromide in each. As patients are apparently in the habit of taking large numbers of these, there must be some risk of bromide intoxication. This practice should be discountenanced and bromides should be placed on the list of drugs which require the presentation of a prescription for their procural.

Conclusions.

1. Estimation of blood bromide by the Walter modification of Hauptman's method is reliable and gives important results in bromide medication.
2. The intoxication level is very variable, but may occur when the blood bromide reaches 200 milligrammes per 100 cubic centimetres.
3. Bromides are rapidly absorbed and slowly eliminated. The latter is helped by the intake of sodium chloride.
4. Symptoms of bromide intoxication are protean and include somnolence, fatigue, loss of energy and inability to concentrate, staggering gait and a feeling of being drunk, hallucinations and delusions, disorientation as to time and place, emotional depression and sometimes acute mania. Any suspicion of these symptoms arising during bromide medication calls for a blood bromide estimation.
5. Too rapid withdrawal of bromides in cases of intoxication is contraindicated.
6. Attention is drawn to the need of the exercise of care in the administration of bromides as the frequency of toxic symptoms is greater than is usually considered by practitioners to be the case.
7. Little attention should be paid to the rash as an indication of toxicity as the other signs are more important and common.
8. In view of the necessity for the clinical observation of patients undergoing bromide medication

the drug should be procurable only by a doctor's prescription.

Acknowledgment.

We desire to thank Dr. N. W. Markwell for permission to publish reports of his patients in the Out-Patient Department at the Brisbane General Hospital.

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Reports of Cases.

LOCAL ANÆSTHESIA IN THE TREATMENT OF FRACTURES OF LONG BONES AND OF DISLOCATIONS.

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Sydney.

INSPIRED by the work of Dr. Cyril Corlette on local anæsthesia and having had the privilege of working under his supervision, I was led to ask him to supervise the putting up of a fracture of the femur under local anæsthesia.

The First Case.

My first case was that of a youth, aged nineteen years, who had been knocked down by a motor car and had sustained a fracture of the middle third of the right femur. This lad was admitted to hospital, and within two hours of the accident was given a hypodermic injection of morphine, 0.022 gramme (one-third of a grain), and hyoscine, 0.00065 gramme (one-hundredth of a grain). The effect of this injection was to produce deep narcosis, during which the patient's respiration rate dropped to 12 per minute and pulse rate accelerated to 92 per minute. One hour after the preliminary medication the limb was carefully palpated to elicit the site of fracture; at the same time measurement revealed shortening to the extent of 25 millimetres (one inch). Then a preliminary skin wheal was made over the site of fracture and a 6.25 centimetre (two and a half inch) needle passed until it reached bone. By carefully feeling along the bone with the needle I was able to locate the end of the upper fragment. I then connected a twenty cubic centimetre glass syringe to the needle and injected about one cubic centimetre of a solution of "Novocain" 2% and adrenalin (one in 150,000). I then withdrew the plunger and a little blood-stained fluid was sucked into the syringe, indicating that the point of the needle was in the blood pool between the fragments. I then injected thirty cubic centimetres of the anæsthetic solution and withdrew the needle. Next I injected the site where the hooks were to be placed. At this stage I noticed that the patient was able to move the limb without discomfort, so I conclude that it is very necessary to prevent the limb from moving and possibly converting a simple fracture into a compound fracture. The fracture was then reduced in the usual manner and slung in a Corlette splint; in traction, a weight of 18 kilograms (40 pounds) was employed.

In this case I think that better relaxation of the muscles was obtained than is usual with a general anæsthetic. Two days later there was no shortening; the traction weight was reduced to 13.5 kilograms (30 pounds), and then by 2.25 kilograms (five pounds) each day until a maintenance of only 4.5 kilograms (ten pounds) was required.

This patient progressed to a normal convalescence. The fragments united in good position and without shortening. Close questioning elicited the fact that he had no recollection of the proceedings attendant to reduction and that he felt no pain for several hours.

The complete success of this reduction induced me to attempt all reductions of fractures of long bones using this method of anaesthesia. As I am attached to the resident staff of the Balmain Hospital, I have had every opportunity of treating fractures by this method, which I find is more successful than reduction under general anaesthesia. In conjunction with Dr. James Bell, also of the resident staff of the Balmain Hospital, I have reduced the fractures and dislocations, using local anaesthesia, as set out in the following statement:

Injury.	Number of Cases.
Fractures of the femur	3
Fractures of the tibia and fibula	6
Fractures of both bones of the forearm	22
Fractures of the first metacarpal bone with medial displacement of the shaft	1
Dislocation of the radius at the radio-ulnar articulation	1
Dislocation of the humero-ulnar articulation ..	1
Subglenoid dislocation of the humerus	1
Supracondylar fracture of the humerus	1

The youngest patient I have treated was a boy of three years, and the oldest a man of seventy-two years.

Patients suffering from fracture of the femur and both bones of the leg have had premedication according to Dr. Corlette's scale of doses.⁽¹⁾

Fractures of the Femur.

The case of fractured femur described was perfectly normal; there was excellent relaxation of muscles; the patient had no recollection of the proceedings and felt no pain for eighteen hours afterwards.

The muscles of the next patient, a lad aged eighteen years, were so perfectly relaxed that X ray examination the following day revealed that 18.75 millimetres (three-quarters of an inch) of shortening had been converted to 18.75 millimetres (three-quarters of an inch) of lengthening. The traction weight was rapidly reduced to 4.5 kilograms (ten pounds). Union was slightly delayed, due, I think, to the lengthening; otherwise the case went straight ahead. This patient had no recollection of the reduction. He said he had felt no pain for twelve hours.

The third patient, a boy aged fourteen years, was given 0.008 gramme (one-eighth of a grain) of morphine and 0.00065 gramme (one-hundredth of a grain) of hyoscine one hour before the contemplated time of reduction. As this did not produce narcosis, he was given a further dose of 0.00032 gramme (one two-hundredth of a grain) of hyoscine. Twenty minutes later reduction was carried out. The patient later remembered nothing of the proceedings. In this case the hyoscine produced some delirium, the patient rambling somewhat twenty-four hours later. Relaxation was excellent and by means of traction of 13.5 kilograms (30 pounds) his shortening was reduced from about 5.0 centimetres (two inches) to about 6.25 millimetres (one-quarter of an inch) in two days. The fracture was three inches above the knee joint. Six weeks later this patient was allowed to walk by the aid of a caliper. There were good callus formation and less than 6.25 millimetres (one-quarter of an inch) of shortening.

Fractures of the Tibia and Fibula.

Of the fractures of the tibia and fibula, one case went straight ahead, excellent relaxation making reduction very easy. In this case a plaster splint was applied while the position of the fragments was being observed by means of the fluorescent screen; results were excellent. The second patient was a man, aged thirty-five years. Good relaxation was obtained, and a plaster splint was applied.

However, while the plaster was drying, the lower fragment of the tibia became displaced posteriorly. This accident was not discovered for five days. He was then given 0.032 gramme (half a grain) of morphine and 0.00065 gramme (one-hundredth of a grain) of hyoscine, and the plaster was removed an hour later. A further injection of 30 cubic centimetres of a 2% "Novocain" and one in 150,000 adrenalin solution was made subperiosteally; the leg was again fixed in a plaster splint and held in position for half an hour to allow the plaster to dry sufficiently to prevent recurrence of the deformity. The results were not so good as in the previous case. Union was very slow; there was only slight union four months after the injury. Eventually, after a further three months, good callus was formed and a fair result obtained. I am unable to explain the cause of slow union in this case, as the man was healthy and the fracture was comminuted. The circulation was good; the blood count was normal, and there was no reaction to the Wassermann test.

The third patient was a boy, aged nine years. The fracture was reduced and fixed in plaster under inspection by means of the fluorescent screen. Thirty cubic centimetres of "Novocain" solution were used for the injection. Union appears to be progressing very satisfactorily. In this case the premedication consisted of the injection of 0.0065 gramme (one-tenth of a grain) of morphine and 0.00032 gramme (one two-hundredth of a grain) of hyoscine. Relaxation was good. The boy felt no pain for fourteen hours after the reduction.

The fourth and fifth patients were a man, aged seventy-two years, and his wife, aged sixty-nine years. They had been knocked down by a car and had each sustained a badly comminuted fracture of the lower third of the tibia and fibula. To each of these patients 0.016 gramme (one-quarter of a grain) of morphine and 0.00045 gramme (one one-hundred-and-fiftieth of a grain) of hyoscine were administered. An injection of twenty cubic centimetres of "Novocain" solution was made into the blood pool between the fragments. Traction of nine kilograms (twenty pounds) was applied. Relaxation could not have been better. Neither felt any pain for twelve hours. Although these patients have only been under treatment for twenty-one days, there are signs of callus formation.

The sixth case, that of a boy, aged fifteen years, I account my only failure, and that only due to faulty technique. In this case the fracture was twelve hours old at the time of admission. The limb was very oedematous, and there was a very large amount of bruising. I used the same method as in my previous cases, and found that every manipulation caused pain in the oedematous area, although no pain was felt at the site of fracture. This boy was given a small amount of ether by inhalation, and reduction was then quite satisfactory. I feel convinced that had I performed a transverse "block" of the limb above the level of the oedema, as well as at the site of fracture, pain would have been eliminated.

Unfortunately, I have not been able to try this method in the treatment of Pott's fracture.

Fractures of the Forearm.

I have reduced practically all types of fracture of the forearm, Colles's fracture, fracture just above the wrist joint, and fractures of the lower, middle and upper thirds, as well as refractures of old fractures (four cases).

The technique in these cases (refractures excepted) has been the same. The only modifications are in the amount of solution used, which varies according to the size of the patient, and the employment or not of premedication. The youngest patient, a child aged three years, was given only two cubic centimetres of "Novocain" solution; the eldest, a man aged forty-five years, was given ten cubic centimetres. In all cases of fracture of the forearm half the injection was made into each blood pool. In the case of refractures the injection was made by subperiosteal infiltration, as there was no blood pool between the fragments.

In eight of these cases no adrenalin was used, and I found that the effects of the "Novocain" wore off much more quickly, pain being felt in about three hours. The other ten were given adrenalin solution (one in 150,000) and felt no pain for periods ranging from twelve to

eighteen hours. The explanation of this, I think, is that absorption from the blood pool is slow at all times and that the presence of adrenalin further retards absorption.

As I have previously stated, the amount of solution injected varies with the size of the patient. I find that after the age of eight years the quantity required is two to four cubic centimetres for each bone.

The fracture of the humerus was supracondylar, with postero-lateral displacement of the lower fragment. The age of the patient was about ten years. No premedication was used in this case. An injection of twenty cubic centimetres of "Novocain" solution was made into the blood pool. After ten minutes the lower fragment was painlessly manipulated into position and the arm put up in full flexion. X ray examination the following day revealed that the bone was in good position.

Fracture of the metacarpal bone, with medial displacement of the shaft, is an unusual fracture, due in this case to direct violence. Here I injected two cubic centimetres of "Novocain" solution into the space between the fragments; relaxation was then so good that the fragments could be manipulated until end-to-end position was secured; the hand was fixed in plaster.

Dislocations.

The dislocation at the distal radio-ulnar articulation was reduced as follows: Four cubic centimetres of "Novocain" solution were injected as an infiltration around the joint and the bones were manipulated into position; then the arm and hand were fixed in plaster in full supination. The plaster was left in position for six weeks.

In the treatment of the dislocation of the humero-ulnar joint, infiltration with 30 cubic centimetres of "Novocain" solution was employed; this caused absolute relaxation of the surrounding tissues, and made reduction very easy. In this case the radial pulse could not be felt for four days, but the circulation of the forearm and hand was very good.

In the case of subglenoid dislocation of the humerus, the brachial plexus was "blocked" with anæsthetic solution and the tissues surrounding the joint were infiltrated. The head of the bone was then manipulated into position by Kocher's method. The procedure for blocking the brachial plexus is as follows: Locate the subclavian artery where it rises above the clavicle; select a point just lateral to it, that is, about the middle of the clavicle; pass a needle in the direction of the spine of the second dorsal vertebra. This brings the needle on to the first rib. Then inject twenty cubic centimetres of 2% "Novocain" and one in 150,000 adrenalin solution; this infiltrates the whole of the brachial plexus.

In my case I found that relaxation was not all that could be desired, so I infiltrated around the joint with 0.5% "Novocain" solution. Perfect relaxation resulted, and the head of the bone slipped back into position quite readily. An interesting feature of this case was that the patient, a woman, aged sixty-five years, was suffering from advanced valvular disease of the heart, and it would have been impossible to give her a general anæsthetic.

Armamentarium.

I usually employ a glass syringe of twenty cubic centimetre capacity, and fine hypodermic needles 5.0 to 7.5 centimetres (two to three inches) in length; capsules, each containing 0.6 gramme (nine and a half grains) of "Novocain"; adrenalin chloride solution (one in 1,000). One capsule of "Novocain" added to 28 cubic centimetres (one fluid ounce) of normal saline solution makes a 2% solution; to this is added 0.18 cubic centimetre (three minims) of the adrenalin solution. If "Novocain" is unavailable, "Planocain" solution of the same strength may be used.

Technique.

(1) Carefully palpate the limb to determine the site of fracture, and prepare the skin with spirit.

(2) Make a skin wheal first and then pass the needle until it reaches bone or until blood can be drawn back into the syringe. The ends of the fragments can usually

be found by carefully feeling along the bone with the needle.

(3) Inject up to 30 cubic centimetres of "Novocain" solution, varying the amount according to the size of the patient and the site of fracture.

(4) Be gentle, and carefully prevent any movement, especially sudden movement.

(5) Reduce all fractures as soon as possible after the injury.

(6) In the event of the limb being œdematous, perform a transverse "block" of the limb above the level of the œdema.

Conclusions.

For the treatment of fractures of long bones and of dislocation I dare to claim that local anæsthesia is superior to general anæsthesia for the following reasons.

Advantages to the Patient.

1. My experience has been that the vast majority of patients dread taking an anæsthetic; if local anæsthesia is used, this fear is eliminated.

2. General anæsthesia usually means sickness when recovering, at the least nausea. Both of these are avoided if local anæsthesia is used.

3. General anæsthetics are apt to produce a certain amount of shock. Shock is absent when a local anæsthetic is used.

4. All general anæsthetics are a risk, even in the most competent hands. This risk is avoided with the use of local anæsthesia. The danger of toxic symptoms is negligible, owing to the slow rate of absorption from the blood pool; the body is able to deal with the anæsthetic as fast as it is absorbed.

Thus, from the patient's point of view, local anæsthesia is superior to general anæsthesia as regards risk, shock and pleasantness of administration.

Advantages to the Surgeon.

From a surgeon's point of view I think the advantages are as follows:

1. In difficult cases a colleague is not needed to administer an anæsthetic.

2. Relaxation is perfect; my experience is that it is better than that obtained under general anæsthesia.

3. Perfect relaxation allows of more manipulations to be carried out without pain.

4. A fracture may be reduced and the patient sent for X ray examination, and any time within two hours further manipulation may be carried out, if necessary. Hence the time factor becomes relatively unimportant.

5. If more time is required, a further injection may be given and another few hours gained.

6. The total absence of pain for some hours after reduction greatly adds to the comfort of the patient.

7. Local anæsthetics can be administered to persons of all ages.

8. Local anæsthesia can be used when general anæsthesia is contraindicated owing to constitutional disease.

Further Considerations.

As further observations I should like to record that in my opinion it is better to use adrenalin, as it so prevents absorption, that pain is absent for at least twelve hours, as against two to three hours, when it is not used.

Fractures should be reduced as soon as possible and, if œdema is present to any great degree, the limb should be "blocked" above as well as at the site of fracture, in order to avoid pain in the œdematous area. The only case I have handled that has not been completely successful, was one in which there was a large amount of œdema, and in which I neglected to "block" the limb above the œdematous area.

I consider that in all cases of fracture in which traction, either skin or skeletal, is to be applied, it is better to use premedication. In all other cases I think it may be dispensed with unless the patient is very nervous.

References.

- ¹ C. E. Corlette: "Local Anæsthesia in General Surgery," THE MEDICAL JOURNAL OF AUSTRALIA, February 7, 1931.
- ² Braun's "Local Anæsthesia."

The Medical Journal of Australia

SATURDAY, JANUARY 16, 1932.

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PREVENTIVE GYNÆCOLOGY.

So much is written about preventive medicine, it is referred to so often in medical papers, editorial articles, presidents' addresses and similar effusions, that there is a danger of its being taken for granted. On the other hand, unless the subject is continually brought to the fore, medical practitioners, especially those engaged in private practice, are likely to pay too much attention to the curative side of their calling. Since their patients generally consult them to gain relief for some particular ailment, this is perhaps natural. The practice of preventive medicine is not the prerogative of the departmental medical officer alone. A medical practitioner investigating a patient's ailment will naturally try to discover its cause; if he discovers the cause, he will, as a matter of course, add to his therapy certain directions in regard to occupation, place of abode, manner of living and so forth, aimed at preventing a recurrence of the symptoms. The family attendant can go further than his specialist brethren. He has the right of *entrée* possessed by no one else; he is the family counsellor and friend; his advice is sought on almost every subject connected with family life. He is often in a position to offer advice whether it is asked or not. One sphere in

which the general practitioner has unusual opportunities is that of preventive gynæcology.

Practically all the troubles connected with the female organs of generation arise after puberty. It follows that attention must be paid to the first menstrual periods. Even at the present time many mothers do not tell their daughters anything about menstruation before the first period has occurred. This is not fair to the child and has anything but a good psychological effect. Most Australian children lead an outdoor life and menstruation for them is but an incident, unpleasant perhaps, but otherwise of no account. The general practitioner often has the opportunity of pointing out to mothers their duty in this regard.

When menstruation has become established, the claims of preventive gynæcology need to be emphasized in four directions. Dysmenorrhœa of young women is a serious handicap to the women themselves and to the industry in which they happen to be employed. As a result of an inquiry a few years ago by an industrial medical officer of a large commercial undertaking, it was found that 10% of the female employees had to seek advice on account of dysmenorrhœa. Menorrhagia may also be considered from the personal and industrial viewpoints. It is important to remember that, though a woman may not be compelled to cease work from either dysmenorrhœa or menorrhagia, her efficiency is likely to be seriously impaired. In these circumstances, by the provision of adequate rest and leisure, by insistence on regular exercise, and by other means, the efforts of the medical practitioner must be directed towards the prevention of a lapse into a state of more or less chronic invalidism.

Passing to the young married woman, we must recognize the inadequacy, nay, the non-existence, of instruction in regard either to normal sex life or to contraception. Instruction on normal marital relations will probably not be given until advice is asked. Incidentally many husbands are woefully ignorant on this matter. Medical practitioners must be prepared to give advice to both husband and wife with candour and conviction. Again, women are often told by their medical attendants that they "must not have any more children". Advice of

this kind is useless unless instruction in contraceptive methods accompanies it. This subject is so large that it requires a chapter to itself.

The third of the four spheres of preventive gynaecology is the most important, though not, as some might suppose, the only sphere worthy of attention. It is that of ante-natal supervision and careful obstetrics. If every woman were left as well and as sound after her confinement as she was before conception, pelvic morbidity would be enormously reduced. The fourth sphere really belongs to the third; it is set in a place apart because it is so frequently neglected. Ante-natal supervision is being more widely practised and there are indications of less hurry and greater care in Australian obstetrics. When the confinement is over, however, and the patient is allowed to resume her wonted activities, a pelvic examination is seldom made. Enough stress has not been laid on this examination. It serves a dual purpose. It allows the medical attendant to control his methods—to determine whether his manipulations have produced laceration of the cervix, whether he has allowed injury to the perineum to pass unheeded, whether involution of the uterus is complete, and so on. It also gives him an opportunity to advise repair of any abnormalities occasioned by trauma, lest by their persistence they give rise to permanent pathological change with its attendant symptoms. Many patients will possibly be unwilling to submit to such an examination; this refusal will give an opportunity for a lesson in preventive medicine.

Of the menopause little need be said. When every woman has been taught what she ought to know about her pelvis and its functions, when every married woman leads a healthy sexual life, when every pregnancy is supervised and every labour terminated *secundum artem*, and when every *accoucheur* satisfies himself that there should be no pathological aftermath—when all this is achieved, the climacteric will occasion little, if any, anxiety.

Gynaecology, like urology and ophthalmology, is regarded by some people as the province of a man who performs operations. The terms gynaecologist and gynaecological surgeon are used indiscriminately, but the general public does not know the

full import of the term surgeon. A gynaecologist must necessarily undergo prolonged training as a surgeon. Many of the pathological conditions which he finds in the female pelvic organs can be treated by surgical operation and some by surgical operation alone: These procedures call for detailed knowledge of the anatomy of the female pelvis, and many of them require manipulative skill of the highest order. This is, of course, curative gynaecology. Just as preventive medicine is more important and must rank higher than curative medicine, so must preventive gynaecology take precedence. Some directions in which preventive gynaecology extends have been indicated. The general practitioner has been shown to have special opportunities of practising preventive gynaecology. We thus come to the unexpected conclusion that the general practitioner may be more important as a gynaecologist than the so-called gynaecological surgeon. Let him see to it that he sets his specialist *confrère* an example.

Current Comment.

THE GASTRO-CARDIAC SYNDROME.

THE association of indigestion with symptoms of cardiac dysfunction is a syndrome familiar to all medical practitioners. Precordial pain, palpitation, breathlessness, extrasystoles *et cetera* are more frequently due to gastric disturbances than to organic heart disease. Yet the origin of these symptoms is very frequently overlooked; many persons with healthy hearts are still dosed with strychnine and digitalis and advised to rest, though their requirements are often merely a little more muscular work and a little less food, and no drugs at all. The diagnosis, however, is not always easy; and the exercise of a careful clinical judgement may be required in prognosis and treatment. It must be remembered that persons with obvious cardiac lesions may also suffer from gastric disturbances, and it may be difficult to estimate how much of their disability is due to either the heart disease or the stomach disorder. The subject, then, is of sufficient importance to merit discussion.

In a recent paper, L. Roemheld, of Gundelsheim, Germany, describes the syndrome, giving it the name "gastro-cardiac syndrome", and suggests treatment.¹ He declares that the cardiac symptoms have either a mechanical (by far the more common) or a reflex cause. Mechanically, the left diaphragmatic vault may be lifted by the accumulation of gases in the stomach or intestines, the heart dislocated upwards, and the aortic arch distorted. This can

¹ The American Journal of the Medical Sciences, July, 1931.

readily be observed by means of X ray examination. He points out that gases distributed generally through the intestinal tract cause a far more pronounced elevation of the left than the right diaphragmatic vault, as the movement of the right vault is restrained to some extent by the weight of the liver. But elevation of the diaphragm does not produce symptoms in all instances, as Roemheld has shown experimentally by distending the stomach with carbon dioxide gas. Reflex effects on the cardiac mechanism are due to the action of toxic substances within the stomach and intestines. hypochlorhydria and achlorhydria play an important part in the causation of these reflex disturbances. Colitis of the transverse and descending colon and gall-stones may also be concerned. Roemheld remarks, however, that ulcer or cancer of the stomach rarely leads to cardiac disturbances.

Those most likely to become affected with dyspeptic heart symptoms are middle-aged or elderly people who take too little exercise, eat too hastily, and lead a life of high tension. The hearts of such people are apt to respond too readily to various stimuli. Men are most likely to become affected at the time of life when the costal cartilages ossify. Men are unaccustomed to costal breathing; when they are forced, on account of gaseous distension, to abandon abdominal breathing, thoracic rigidity combined with inaptitude causes considerable distress.

Among the symptoms mentioned by Roemheld are the following: pain in the left side of the chest which may be suggestive of *angina pectoris*, sub-sternal pain, breathlessness, bradycardia, extra-systolic arrhythmia, vertigo, faintness, symptoms resembling the Stokes-Adams syndrome.

When the stomach is empty, examination of the heart reveals no abnormality, but when the gastric digestive processes are at the height of their activity, the apex beat is dislodged upward and outward, the percussion note may be tympanitic, even above the nipple, and there is a relatively dull note below the left clavicle. In some instances this evidence of cardiac displacement is difficult to detect. Patients are apt to become neurotic; they complain of a multitude of symptoms and become convinced that they have heart disease. They avoid exercise, hence retain more and more gas and tend to become obese; as a consequence, the elevation of the diaphragm is increased and the symptoms are correspondingly intensified. Having learned by experience that belching gives temporary relief, these patients are apt to create a vicious circle by developing a habit of belching and air swallowing.

Accumulation of gases in the stomach and intestines may be due to: aerophagy; deficient absorption and expulsion, the result of increased vagal tonus or anatomical changes; increased formation of gas, the result of abnormal fermentation.

In treatment, the general bodily health and the mental state require attention; efforts must be directed towards removal of the cause of the gaseous distension; abdominal massage, baths, gymnastics,

breathing exercises *et cetera* should be employed with the object of hastening the dispersal of accumulated gases, and improving the condition of the diaphragmatic musculature. The immediate relief of acute symptoms depends on the relief from distension. Various measures readily suggest themselves. Results of proper treatment are highly satisfactory in most instances.

The problem of the patient suffering from actual cardiac disease is considerably more complicated. The amount of exercise and rest required varies, of course, with the individual. The other measures of treatment suggested for persons with normal hearts are of value, not only in their effect on the gastrointestinal disorder, but also in the improvement they produce in the general physical condition. The load on the diseased heart is lightened as the abdominal and general conditions improve. Roemheld quotes Broadbent as stating: "In practice the treatment of the stomach and nerves is more successful than treatment of the heart itself."

Roemheld has drawn attention to a common and important condition that is a source of considerable mental and bodily distress to many people. Of particular interest is his observation concerning the clinical evidence of cardiac dislocation. No doubt many clinicians have noted similar abnormalities and have recognized their significance; but many would be puzzled, and many others would have no hesitation in making a diagnosis of cardiac disease. Conceivably the results of X ray examination in these circumstances might be fallacious; Roemheld remarks that the aortic distortion is suggestive of sclerosis; and it is possible that, unless care is exercised, the alteration in the position of the heart might be mistaken for hypertrophy. Nevertheless, in the investigation of the so-called gastro-cardiac syndrome, radiology should be of greater value than any other means at the observer's disposal.

From the clinical point of view it is important to remember that precordial pain due to definite organic disease of the heart or aorta is sometimes relieved by belching. Only by careful investigation, therefore, can the danger of drawing erroneous conclusions be avoided.

DEMONSTRATIONS ON POLIOMYELITIS IN SYDNEY.

THE attention of medical practitioners in and around Sydney is drawn to the arrangements made by the New South Wales Branch of the British Medical Association for the demonstration of patients suffering from poliomyelitis. The demonstration will be held at the Royal Alexandra Hospital for Children on Monday and Tuesday, January 18 and 19, 1932, at 3 o'clock p.m. In view of the prevalence of poliomyelitis and of the difficulties of diagnosis, referred to in these pages in last week's issue, medical practitioners are urged to make the most of this opportunity.

Abstracts from Current Medical Literature.

SURGERY.

Injection Treatment of Hæmorrhoids.

H. ELSNER (*Klinische Wochenschrift*, May 30, 1931) discusses the non-operative radical treatment of hæmorrhoids by injection. He prefers 70% alcohol to quinine-urethane, corrosive sublimate or carbolic acid, despite the fact that these injections are not painless. The intestinal tract should be well cleared out before injection and the anal region rendered anaesthetic with "Novocain"-adrenalin injections. A Bier suction apparatus is used to induce prolapse of the varicosities. These are then injected with 0.5 to 1.0 cubic centimetre of alcohol from the apex to the base of each pile mass. Three days' rest in bed with a light diet is the rule. The sclerosed masses gradually disappear within three weeks. An important point in technique is the thorough replacement of the masses into the rectum after injection, otherwise convalescence is apt to be prolonged.

Post-Operative Latent Jaundice.

NORMAN W. ELTON (*Surgery, Gynecology and Obstetrics*, November, 1931) writes on post-operative latent jaundice. Latent icterus develops following trauma, accidental or operative, probably due to the release of a surplus of bilirubin from the interstitial blood extravasation. In a study of twenty consecutive patients, undergoing an uneventful post-operative recovery after a wide variety of operations, in whom either general or spinal anaesthesia was used, it is found that there is evidence of a definite, direct, positive tendency in the Van den Bergh reaction which is difficult to explain by any known pathological process in the liver, and which appears to be associated only with the excretion of a surplus of bilirubin.

Carcinoma in Osteomyelitis.

EDWARD B. BENEDICT (*Surgery, Gynecology and Obstetrics*, July, 1931) writes about carcinoma in osteomyelitis. That carcinoma may develop in old ulcers and sinuses has been known for about a hundred years, but little has been written recently about the subject. The history and course of the disease in a typical case is somewhat as follows. A man of middle life or beyond enters the hospital because of foul ulcers or sinuses, generally of the lower leg, but sometimes of the thigh or foot. In about half the cases pain is a prominent symptom. Not infrequently there is a history of trauma preceding the onset of the osteomyelitis. Usually surrounding the fistulous opening there is a fairly definite cauliflower mass which leads at once to the diagnosis of carcinoma. In some cases, however, there is no external evidence of malignant disease,

or in others there may be a slight epithelial overgrowth at the margin of the sinus opening. Carcinoma is a rare complication of very long standing osteomyelitis, occurring more often in the tibia than in any other bone. The diagnosis may be very easy when the growth is superficial, or very difficult when deep-seated; in some of the latter cases a diagnosis can be established only by biopsy, or rarely perhaps by X ray examination. The treatment should be, first, prophylactic, in not permitting an osteomyelitis sinus to remain open indefinitely, and second, curative, by amputation in most instances. The prognosis is generally favourable, the condition being of slow development and usually of low malignancy.

Carcinoma of the Bladder.

G. E. PEABLER (*Surgery, Gynecology and Obstetrics*, November, 1931) writes about diagnosis and treatment of carcinoma of the bladder. Pneumocystography is a valuable means of determining the presence, size, outline, position and amount of infiltration of a carcinoma of the bladder. It can be carried out by any careful radiologist with sterile catheter, atomizer bulb and a hæmostatic forceps. Radiotherapy involves treatment by radium in the form of capsules, needles or seeds (glass or gold) and by the use of deep X ray therapy either alone, or before, or after electrocoagulation. It seems that electrocoagulation is better than incision, followed by radium or X ray treatment. Some encouraging results have been obtained by irradiation alone. Under such treatment the patient is usually relieved of hæmorrhage and pain.

Tuberculosis of the Breast.

MAXIMILIAN MORGEN (*Surgery, Gynecology and Obstetrics*, November, 1931) writes on tuberculosis of the breast. He states that in summarizing this subject certain outstanding features must be kept in mind, some of which are as follows. The rarity of tuberculosis of the breast is apparent rather than real, and arises from the condition being overlooked. The classification of mammary tuberculosis into primary and secondary forms is fundamentally unscientific in that there is no absolute criterion and proof whether an infection is primary or not, even if there is no clinical evidence of tuberculosis elsewhere in the body. The most likely mode of infection is *via* the lymphatics through a retrograde process, the original site being either in the glands of the neck or the glandular tissue about the hilus of the lung. It occurs most frequently during the active sexual period of life. Its symptoms are varied, the most frequent being a lump in the upper, outer quadrant associated with axillary involvement, but no pain, until it enlarges sufficiently, breaks down and forms a fistulous tract. The prognosis is good if the disease is recognized early and if the focus is removed by surgical operation. The pathology is similar to the pathology of tubercu-

losis elsewhere in the body, except for some minute differences due to the histological structure of the breast.

Experimental Obstruction of the Terminal Duodenum and Ileum.

ROBERT ELMAN AND A. F. HARTMAN (*Surgery, Gynecology and Obstetrics*, September, 1931) have made observations on experimental obstruction of the terminal duodenum and ileum. The object of the paper is to present additional evidence for the belief that the chief factor in the production of the so-called "toxæmia" and death following obstruction of the terminal part of the duodenum is to be found in the chemical changes in the body fluids due to loss of gastro-intestinal secretions, and that the fatal termination, when associated with obstruction in the terminal part of the ileum, must be explained in another manner. In an attempt to evaluate the blood chemical change as a factor in causing death in high and low intestinal obstruction, complete fistula or obstruction was created in six dogs at the terminal part of the duodenum and in seventeen at the ileo-caecal junction. Changes in blood serum, concentration of chloride, carbon dioxide content, protein, inorganic phosphate, lactic acid, total base, water content and non-protein nitrogen were followed, and the following conclusions were drawn. The principal cause of the rapid death which follows high obstruction (or fistula) in the terminal part of the duodenum is to be found in the chemical changes in the body fluids, resulting primarily from loss of gastro-intestinal secretions, and secondarily, from circulatory and renal insufficiency, due to dehydration. The cause of death following low (ileo-caecal) intestinal obstruction is not, except in rare instances, due to such changes. It is not necessarily due, moreover, to gangrene or necrosis of the obstructed intestine. Blood chemical examination cannot be relied upon as a measure diagnostic either of the site or presence of intestinal obstruction. Its chief value is that it makes it possible to determine the extent of loss of gastro-intestinal secretions and the adequacy of treatment designed to restore the loss.

Retroperitoneal Lipoma.

EDOARDO PRETO (*L'ospedale Maggiore*, June, 1931) records a retroperitoneal fibrolipoma occurring in a single woman, aged thirty-one years. Some two years previously she had first noticed an increase in her abdominal measurements, which was followed later by cessation of menstruation and a progressive loss of flesh and weight. Dyspnoea resulted from pressure of the tumour on the diaphragm. The tumour mass varied in consistency, being in parts hard, in parts of an elastic character. At operation five large neoplastic masses were removed, the biggest of which weighed over twenty-two kilograms. Histologically the growth proved to be a

fibrolipoma—the consistency thus varied according to whether the fibrous or the lipomatous element predominated. The author, in a review of the subject, points out that retroperitoneal tumours vary histologically from benign lipomata to malignant sarcomata. The sarcoma may remain encapsulated for years and does not as a rule attain the great size of the lipomata. Gastric symptoms are not infrequent and pain from nerve pressure is related rather to site than to size. Insufflation of the colon may aid in diagnosis. The prognosis is grave and operative intervention is a serious matter, with high mortality. An important point in technique is that hæmostasis should be perfect.

Transplantation of the Ureters.

ROBERT C. COFFEY (*North-West Medicine*, October, 1930) outlines a preliminary report of five cases of cystectomy with bilateral transplantation of the ureters in one operation. His first patient, a male, aged fifty-nine years, had a history of hæmaturia for three years. The bladder was the seat of a cancer 3.75 centimetres (one and a half inches) in diameter, which infiltrated the bladder wall and involved the right ureteric orifice. The right ureter was dilated to the size of the index finger. Blood transfusions were given in all cases, both before and after operation. The ureters were transplanted into the large intestine by the author's method as described in *Surgery, Gynecology and Obstetrics* of November, 1928, and the bladder was removed by the author's technique as described in the *Annals of Surgery*, June, 1930. The gauze pack was removed from the bladder space at the end of a week and thereafter repacking was carried out every five or six days until the wound closed. The patient was quite well nine months after operation; he claims that there is no distress from the presence of urine in the rectum. The next patient, a female, aged forty-five years, was the subject of mitral valvular disease. By cystoscopy a large growth was seen to occupy the posterior wall of the bladder just above the ureteral orifices. At operation infiltration of the broad ligament was found. Transfusions of whole blood were employed. After operation the right catheter became blocked and, as the patient experienced two chills during the first forty-eight hours, a lumbar incision was made and a catheter passed into the pelvis of the kidney. This patient developed arrhythmia and died on the seventh day after operation. The third patient was a male, aged fifty-one years, who had undergone left nephrectomy two years previously for papilloma of the renal pelvis. In the interval several operations for fulguration of vesical papillomata had been performed. At operation the remaining ureter was transplanted into the large bowel and the bladder was removed down to the neck and including the mucosa covering the prostate. The patient was quite well two months after operation. The

fourth patient was a male, aged forty-five years, who complained of hæmaturia following any exertion for the past eight months. The bladder was filled with 95% alcohol prior to operation. The ureters were transplanted, the bladder removed and the vesical space packed with the usual gauze tap. The catheter came away on the tenth day, and the cavity was dressed every five days until the thirtieth day after operation, when the patient commenced to walk. As a rule the rectal sphincter takes only a few days to become adjusted to retaining fluid. The fifth patient was a woman, aged sixty-two years, who had recently lost over 12.6 kilograms (two stone) in weight. She had had a course of deep X ray therapy and was somewhat jaundiced. There was glandular involvement along the right ureter, no metastases were found in the liver. After the operation there was anorexia and vomiting, the left catheter became blocked after twenty-four hours. The left ureter was then exposed below the kidney and drained. The author concludes that the operation is much less dangerous in the male, as there is only one area to be drained, and this is extraperitoneal. The author prefers to do the complete operation at one sitting in the male, but the same success is not attended in a similar operation on a female patient. The two-stage operation in a female patient is attended with lower mortality.

Myelography.

K. MOSER (*Deutsche Medizinische Wochenschrift*, September 25, 1931) discusses the value of intraspinal injections of "Iodipin" in the differential diagnosis of spinal tumours and diseases of the spinal cord. The usual technique followed was the injection of one to two cubic centimetres of "Iodipin" in the suboccipital region with the patient in the sitting position. The details of four cases with myelograms are presented. The differential diagnosis lay between multiple sclerosis, tuberculous spondylitis, secondary involvement of the cord following vertebral deformities, myelitis, Landry's paralysis on the one hand and spinal tumours on the other. This method of investigation is particularly useful in atypical cases with doubtful neurological findings and is of the greatest value in the early and exact diagnosis of tumours.

Biopsy in Malignant Disease.

JOSEPH COLT BLOODGOOD (*Journal of Laboratory and Clinical Medicine*, April, 1931) discusses the indications for biopsy in the treatment of malignant disease. The author expresses the opinion that many surgeons are too anxious for the performance of biopsy before other avenues of clinical and laboratory investigations have been explored. A trial of X rays or radium should be made before the excision of a piece of tissue for frozen section diagnosis. The author has been associated with the Surgical

Pathological Laboratory of the Johns Hopkins Hospital since 1892, and his outlook has altered during recent years upon the advisability of undertaking biopsy in breast lesions. Formerly the complete operation was advised when malignant disease was suspected, but records would seem to show that in doubtful cases it is just as safe to remove the tumour completely and to refer the sections to a consulting pathologist. Records also tend to show that when a surgeon is in doubt from the naked eye appearance, the probabilities are that the tumour is benign. It is interesting to note that the same sections which were submitted to experienced pathologists in 1915 and voted "malignant" were again submitted to a similar group in September, 1930, when the majority voted them "benign". It was Dr. Halstead's custom as early as 1891 to explore breast tumours and refer pieces to Dr. Welch for an opinion. This was the first year that frozen sections were made in the surgical clinic at the Johns Hopkins Hospital. In doubtful cases it was Halstead's custom to make an exploration; if malignancy was found, the surface was swabbed with pure carbolic acid, the wound was closed and then the complete operation was performed. Bloodgood is coming to rely more and more on the interpretation of the frozen section in the operating room. In lesions of bone biopsy should be a last resort. Whilst X ray films are being submitted for consultation, radiation therapy should be employed. The surgical clinics of the world must train pathologists to make frozen sections and interpret them in the operating room.

The Treatment of Fractures.

W. MÜLLER (*Deutsche Medizinische Wochenschrift*, August 14, 1931) discusses recent advances in the treatment of fractures. He emphasizes the value of local anaesthesia for all except multiple fractures or in children. It is also extremely useful in the reduction of dislocations. He uses 2% "Novocain" in amounts of 20 to 40 cubic centimetres injected freely into the surrounding tissues. The anaesthesia and muscular relaxation produced play an important part in insuring accurate apposition of the fractured bones. The author advocates gutter plaster splints for most fractures rather than padded splints. Extension apparatus is essential for fractures of long bones, but tension on skin surfaces should be reserved for fractures in children. The modern tendency to obtain sufficient tension is by the use of fine wire in place of larger nails such as recommended by Steinmann. The tissues are infiltrated down to the periosteum with "Novocain", when a fine hole can be bored without the use of further anaesthetic. Fractures of the olecranon and patella are best treated by open operation and suture of the fragments. As few sutures as possible are used in order to prevent poor healing and the formation of pseudoarthroses.

British Medical Association News.

ANNUAL MEETING.

THE ANNUAL MEETING OF THE QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the B.M.A. Building, Adelaide Street, Brisbane, on December 11, 1931, Dr. F. A. HOPE MICHOD, the President, in the chair.

ANNUAL REPORT OF COUNCIL.

The annual report of the Council was taken as read on the motion of Dr. G. P. Dixon, seconded by Dr. Alex. H. Marks, and was adopted on the motion of Dr. A. H. Marks, seconded by Dr. S. F. McDonald. The report is as follows.

Membership.

The present membership of the Branch is 496, as against 481 last year. Our net gain was 15.

The additions have been: Election of new members, 17; paid arrears of subscription, 5; transfers to the Branch, 25; rejoined, 2.

The losses were: Transfers from the Branch, 18; resigned, 2; default in payment of subscription, 10; deaths, 4.

It is with very much regret that the Council records the deaths of the following members: Dr. J. Espie Dods, who was for many years closely associated with the Branch and was a Past-President; Dr. T. Howard Morgan and Dr. H. E. Brown, both of whom were members of long standing; and Dr. R. T. Johnson.

Members' Subscriptions.

It is noted with regret that twenty-nine country members and seventeen metropolitan members have not yet paid their subscription for the current year. This represents an amount of over £100 owing to the Branch funds, in addition to a similar sum in payment of both journals.

It is pointed out that subscriptions become due on January 1 in each year, and it would be of great advantage to the Branch if members would endeavour to pay them as early in the year as possible.

Meetings.

General.

The annual meeting and eight ordinary meetings were held during the year, including two clinical meetings. The average attendance was 39. There were also two special scientific meetings of the Branch held, the average attendance at which was 58.

One special general meeting of the Branch was held on October 30, when the amended by-laws of the Branch were considered.

No general meeting of the Branch was held in February owing to floods which occurred in Brisbane on the date which had been fixed for the meeting.

Council.

The Council held twenty-two ordinary meetings and five special meetings. Two of the special meetings were held to deal with the lodge position at Toowoomba, a combined meeting was held with the Contract Practice Section to consider the reduction of the lodge capitation fee. A combined meeting with the members of the honorary staffs of the hospitals under the Brisbane and South Coast Hospitals Board was held to discuss the recommendations of the Royal Commission on Hospitals, and a special meeting of the Council was held to consider further amendment of the draft amended by-laws of the Branch.

In August Dr. C. E. Tucker tendered his resignation as a member of the Council, and Dr. Ellis Murphy was appointed to fill the vacancy.

Dr. Gavin Cameron was appointed Chairman of Committees, and Dr. Kenneth Wilson was appointed to the position of Assistant Honorary Secretary.

The record of attendance of members of the Council was as follows:

	Ordinary.	Special.
Dr. F. A. Hope Michod (President)	20	5
Dr. S. F. McDonald (Past-President)	15	3
Dr. E. S. Meyers (President Elect and Federal Committee Representative)	16	5
Dr. Alex. Murphy (Honorary Treasurer) ..	18	4
Dr. B. L. W. Clarke (Honorary Secretary) ..	14	3
Dr. Kenneth Wilson (Assistant Honorary Secretary)	19	3
Dr. Gavin H. Cameron (Chairman of Com- mittees)	19	4
Dr. Neville G. Sutton (Honorary Librarian) ..	14	1
Dr. M. Graham Sutton (Honorary Curator of Museum)	16	1
Dr. D. Gifford Croll (Federal Committee Representative)	15	1
Dr. J. Hedley Brown (Councillor)	20	4
Dr. C. M. Lilley (Councillor)	16	3
Dr. F. W. R. Lukin (Councillor)	19	5
Dr. N. W. Markwell (Councillor)	21	5
Dr. Ellis Murphy (Councillor)	5	1
Dr. Mervyn S. Patterson (Councillor)	18	1
Dr. W. N. Robertson (Councillor)	16	5
Dr. D. E. Trumpy (Councillor)	16	2
Dr. C. E. Tucker (Councillor)	12	2

Scientific Meetings.

December.—Professor D. W. Carmalt Jones, New Zealand: "Toxic Goitre and Allergy."

March.—Clinical Meeting held at the Mater Misericordiae Hospital combined with the Mater Misericordiae Hospital Clinical Society.

April.—Dr. A. S. Roe: "Surgical Aspects of Prostatectomy."

May.—Dr. R. W. Cilento: "A Review of Tropical Medicine in Australia."

June.—Joseph Bancroft Memorial Lecture, Professor F. Wood Jones, Melbourne: "The Changing Point of View."

July.—Dr. Alan E. Lee: "Diagnosis of Acute Appendicitis."

August.—Mr. F. C. Bennett, B.Sc., Director of the Pharmacy College: "The Australian Pharmaceutical Formulary of 1930."

August 28 (Special Meeting).—Professor William Wright, Professor of Anatomy, London, gave a descriptive discourse on Anatomy in the 16th Century.

Professor G. A. Buckmaster, Professor of Physiology, Bristol University, presented "Notes on Observations on Recent Physiological Research."

September.—Jackson Lecture, delivered by Dr. E. Sandford Jackson: "Voyages Connected with the Discovery of Australia: Some of Their Medical History."

October.—Dr. Ellis Murphy: "Cardiac Arrhythmia."

November.—Clinical Meeting held at the Mater Misericordiae Hospital in conjunction with the Mater Misericordiae Hospital Clinical Society.

Many interesting cases and specimens were exhibited at the various meetings, and a number of the papers were illustrated with lantern slides.

Personnel of committee responsible for the programme of papers: Dr. C. E. Tucker, Dr. F. W. R. Lukin, Dr. C. M. Lilley, and the *ex officio* members of the Council. Mr. Geo. Hancox is Honorary Lanternist.

Library.

Dr. Neville Sutton was again appointed to the position of Honorary Librarian.

The only new book added to the library was "The Official History of the Australian Army Medical Services in the War of 1914-1918," Volume I, compiled by Colonel A. Graham Butler, D.S.O., B.S., M.B. (Cambridge).

Members who borrow books from the Library are asked to adhere to the By-laws of the Branch in this connexion.

Federal Committee.

Only one meeting of the Federal Committee was held during the year, which took place in Melbourne on March 27. The Branch was represented thereat by Dr. D. Gifford Croll and Dr. W. N. Robertson, who took the place of Dr. E. S. Meyers, who was unable to attend. A report of the proceedings was published in *THE MEDICAL JOURNAL OF AUSTRALIA*, April 18, 1931.

At this meeting consideration was given to the proposals for the formation of a Federal Council representative of the Branches in Australia, and the question of financial arrangements is being discussed with the parent body of the Association.

**Australasian Medical Congress
(British Medical Association).**

The Fourth Session of the Australasian Medical Congress will be held at Perth from October 24 to 29, 1932.

Dr. B. L. W. Clarke has been appointed State Secretary for Queensland.

At the request of the General Committee of Congress nominations of members of the Branch have been forwarded by the Council for presidents and vice-presidents of various sections.

The President of the Congress is Dr. D. D. Paton, and Dr. J. P. Ainslie and Dr. L. E. Le Souef are Joint Honorary Secretaries.

Representation.

The Branch was represented as follows during the year:

Council of the British Medical Association: Professor

R. J. A. Berry.

Representative Body: Dr. H. J. Eizenberg.

Federal Committee of Branches: Dr. D. Gifford Croll,

Dr. E. S. Meyers and Dr. W. N. Robertson.

Australasian Medical Publishing Company, Limited:

Dr. D. Gifford Croll.

Queensland Cancer Trust: Dr. B. L. W. Clarke, Dr. M. Graham Sutton.

Subcommittees.**Hospital.**

Personnel: Dr. C. M. Lilley, Dr. N. W. Markwell, Dr. Neville Sutton, Dr. Graham Sutton, and the *ex officio* members of the Council.

Royal Commission on Hospitals: Ever since the Royal Commission on Hospitals published its report, the Council has used every endeavour to insure that a Bill covering the recommendations should be brought into force.

It appears unlikely that such legislation will be brought into operation at the present moment. In spite of this, however, important recommendations of the Royal Commission have already been acted upon.

Numbers 9 and 10, in so far as the Brisbane and South Coast Hospitals Board is concerned:

A person holding the position of Under-Secretary or Assistant Under-Secretary of the Home Secretary's Department should not be a government nominee to any hospital board. The present Assistant Under-Secretary should therefore cease to be a government representative on the Brisbane and South Coast Hospitals Board.

The Assistant Under-Secretary to the Home Secretary's Department is no longer a member of the Brisbane and South Coast Hospitals Board.

In all future appointments to hospital boards which administer a hospital of 100 beds or over, one of the government nominees to such board should be a member of the medical profession, dissociated from the Public Service, and nominated by the members of the profession in the board's area.

Dr. W. N. Robertson has been appointed as government nominee to the Brisbane and South Coast Hospitals Board.

Number 13:

As it is not to the advantage of either the patients or the community to retire members of the honorary

medical staff when their capabilities are at their best, consideration should be given to the advisableness of extending the term of members of the honorary medical staff.

An extension of five years has been granted to members of the honorary staff of the Brisbane hospitals, making a maximum of fifteen years.

Number 18:

The rule under which a medical practitioner is held liable for the hospital fees of his patients admitted to the private ward of a hospital should be deleted and a rule substituted, allowing such patients to be admitted to such wards, provided that the admission officer is satisfied the fees can be paid.

This matter was taken to Cabinet, with the result that revised rules have been issued by the Home Secretary's Department, relieving the medical practitioners of this responsibility.

In addition, the authorities have promised that certain other recommendations that can be acted upon, shall be put into effect, notably recommendation number 19, which deals with suggestions for effecting economy in the purchase of hospital equipment and supplies.

Representatives of the Council have also waited upon the Home Secretary on several occasions, with the result that various matters have been adjusted which will make for smooth running in hospital administration as far as the Association is concerned.

The question of the establishment of intermediate wards in hospitals, or special accommodation in public wards (where no intermediate wards exist) has not been definitely settled. It is the intention of the Council to endeavour to have this matter settled, at any rate by regulation if not by Act of Parliament.

While success has been definite in the direction indicated, we are of the opinion that the Government is making a serious mistake in not following out recommendation number 8 of the Commission, as follows:

The administration of the *Hospitals Acts* should be placed under the control of a permanent commission of three members.

There is ample evidence in the report of the Commission that the appointment of a commission or a commissioner would result in great economy and would improve the administration of hospitals in Queensland.

We have evidence that in certain sections there is no efficient means in operation to prevent those who are able to pay, exploiting the services of the medical profession and the hospitals. Quite apart from the point of view of the medical profession's side of the case, at a time when it is imperative to reduce the expense of social services to a minimum, it seems essential to us that the hospitals should be free only to those who cannot afford to pay their way.

If the commission or commissioner were appointed, the difficult problem of who is to pay for treatment in hospital would be practically overcome, provided that the commission or commissioner was given sufficient authority and freedom from political control to allow him to conscientiously carry out his duties.

Industrial Accident Cases: In regard to the question of industrial accident cases, it was with great regret the Council noted that the Commissioners were not in favour of recommending that the medical and nursing expenses in connexion with industrial accidents should be met by the State Government Insurance Department. The Commissioners stated that it does not seem an opportune time to place an additional expense of £40,000 on employers, but, on the other hand, the medical profession is expected, by its honorary service, to give gratuitously medical attention that certainly should be a charge against industry and not a charge on the medical profession, who have suffered in the recent financial crisis probably more severely than most sections of the community.

It is noted that the State Insurance Commissioner reported that to pay the £40,000 it would be necessary to increase employers' premiums by 12%, but, as we under-

stand this department of the Government results in a large profit, it is quite likely that there would be no need to increase employers' premiums.

The incoming Council is recommended to press for an Insurance Act similar to that of New South Wales and Western Australia.

The Subcommittee held fourteen meetings, and, in addition to hospital matters in general, many questions with regard to particular country hospitals were dealt with.

Model Hospital Agreement: The Council is very anxious that all members accepting hospital appointments should have written agreements with their committees. A model hospital agreement has been drawn up and approved by the Council, a copy of which will be sent to any member who may desire it.

Rules and Ethical.

Personnel: Dr. W. N. Robertson, Dr. N. W. Markwell, Dr. Hedley Brown, Dr. Graham Sutton, and the *ex officio* members of the Council. Dr. F. W. R. Lukin and Dr. Gifford Croll were coopted for several of the meetings.

Nineteen meetings were held, at which many questions of a personal and general nature received attention.

Amended By-Laws of the Branch: A great deal of time was spent in connexion with the amendment of the By-laws and legal opinion was obtained. The amended By-laws were adopted at a special general meeting of the Branch held on October 30, with the exception of numbers 3 and 52. The proposed amendment of these two By-laws has been sent to members, and with their adoption at the annual meeting of the Branch, to be held on December 11, the new Rules of the Branch will be completed, and when printed, a copy will be forwarded to each member. With the exception of the two By-laws mentioned above, the amended By-laws are now in operation, and the attention of members is particularly drawn to the following:

By-Law 88: Procedure in Ethical Matters.—In accordance with Rule 9, an Ethics Committee will be appointed at the annual general meeting of the Branch to be held on December 11, 1931.

The Ethics Committee shall consist of the President, the President-Elect, the Honorary Treasurer and Honorary Secretary for the time being, *ex officio*, together with not less than five nor more than seven other members of the Branch.

By-Law 86: Holiday Practice.—Rules governing procedure of a member whilst visiting a district on holidays have been drawn up.

By-Law 87: Rules Governing the Conduct of Members in Regard to Fees in Private Practice.—These rules provide for free choice of surgeon by patient or person legally responsible for him. The member operating shall conduct the post-operative treatment, except by special arrangement with the patient. A member shall tender his account for such surgical operation and post-operative treatment direct to the patient or person legally responsible for him. A member must not accept his fee for surgical operation from the practitioner in charge of the patient, unless he forward a receipt for the fee direct to the patient. Provision is made for the collection of the fee direct from the patient if circumstances compel the member operating to delegate the post-operative treatment to another practitioner. The member operating must not pay the practitioner in charge of the patient the fee for conducting post-operative treatment. Separate accounts for assistant, anaesthetist, or for other necessary services must be sent to the patient, or the member must state on his account form the exact amount due for these services.

The assistant's standard fee shall not be more than one-eighth of the operation fee, or alternatively not more than five guineas. Otherwise the assistant must render his account on his own account form. The same provision also applies with regard to the anaesthetist's fee. The practitioner in charge of the patient should be present at the operation on his patient. In the event of his having to travel a distance for this purpose, the patient must be informed of the extra fee involved.

Press Publications (vide By-law 31):

No member shall permit any letter, article or paragraph relating to disease or its treatment, his authorship of which is indicated by signature or otherwise, to appear in the lay press.

We have again had several instances of the infringement of this By-law.

In the publication of matters, other than medical subjects, it is advisable that the names of members should not appear, as this is really not necessary in the interests of the public.

Public Health.

Personnel: Dr. D. Gifford Croll, Dr. Neville Sutton, Dr. N. W. Markwell, and the *ex officio* members of the Council.

Six meetings were held during the year, which included two combined meetings with the Parliamentary Subcommittee. The main business dealt with was the consideration of a model scheme for health control in Queensland in view of the proposed amendment of the *Health Act*, which ultimately took place early in October.

It is with regret we report that the Government has not accepted the recommendations in connexion with the model scheme. The central idea with regard to the reorganization of health services was a Ministry of Health.

Although the new Act is not entirely satisfactory from the medical standpoint, improved regulations have been brought into force regarding the sale and use of drugs.

Diphtheria Immunization Campaign: At the request of the Commissioner of Health, an announcement was made in the press to the effect that the medical profession considers immunization absolutely safe, effective and necessary.

Cancer: At the request of the Commonwealth Department of Health, an expression of opinion was obtained from members at the general meeting held on August 7, that the making of cancer a notifiable disease is not approved.

Poliomyelitis: A list of the resolutions passed at the Poliomyelitis Conference held by the Commonwealth Department of Health in April last was received from the Director of the Commonwealth Health Department in Brisbane, and a recommendation was made suggesting the sending out of a pamphlet to all practitioners, or the publication of a statement in *THE MEDICAL JOURNAL OF AUSTRALIA*.

Dengue Control: The City Entomologist, Dr. R. Hamlyn Harris, forwarded a copy of a paper recently published by him, entitled "The Elimination of *Aedes argenteus* Poiret as a Factor in Dengue Control in Queensland."

Special Nephritis Consultative Committee: The name of Dr. A. Breinl, of Townsville, has been added to the personnel of this Committee. No action has been taken by the Committee pending the publication of a report on the subject by the Director, Division of Tropical Hygiene, Brisbane, Dr. R. W. Cilento.

Ophthalmic Grant by the Department of Public Instruction: The matter of the reduction of the ophthalmic grant by 50% in connexion with the examination of school children's eyes by medical practitioners in country districts was taken up with the Department of Public Instruction and a protest entered in view of the fact that other branches of the Civil Service have not had their salaries reduced to this extent. The reason given for the reduction was shortage of funds, and no hope was held out for any increase in the present amount granted.

Parliamentary.

Personnel: Dr. W. N. Robertson and Dr. Hedley Brown, together with the *ex officio* members.

Two meetings in conjunction with the Public Health Subcommittee were held.

This Subcommittee has also performed a great deal of useful work in keeping in touch with proposed legislation which would affect the medical profession, and in endeavouring to see that the views of the Branch were put forward.

Publicity.

Personnel: Dr. W. N. Robertson, Dr. D. E. Trumpy and Dr. Mervyn Patterson, and the *ex officio* members.

No official publications have been issued by the Branch during the year.

Lodge.

Personnel: Dr. C. E. Tucker, Dr. F. W. R. Lukin, Dr. D. Gifford Croll, and the *ex officio* members of the Council.

Sixteen meetings were held during the year, which dealt with the reports from the Contract Practice Section Committee.

Building.

Personnel: Dr. W. N. Robertson, Dr. D. Gifford Croll, Dr. Graham Sutton and the *ex officio* members of the Council.

During the year the occupancy of "Bay View," on Wickham Terrace, has changed hands, and the present tenant has signed a lease for two years from July 10 last. A certain amount of money had to be spent on the house, which was badly in need of renovation, and this has now been completed.

At the instigation of several debenture holders, a meeting was held on June 16, when a voluntary reduction of interest rate to 5% on money loaned to the Branch was agreed upon.

Editorial.

Personnel: Dr. Neville G. Sutton and Dr. Charles M. Lilley.

*Sections for Special Branches of Medical Knowledge.**Eye, Ear, Nose and Throat Section.*

Inaugurated 1924.

President, Dr. Ernest Culpin; Vice-President, Dr. E. J. McGuinness; Councillor, Dr. Walter Crosse; Honorary Secretary, Dr. F. G. Meade.

Membership, 25.

Three quarterly meetings were held during the year. Matters relating to contract practice were again discussed at the various meetings. The Council was requested to grant authority for the election of a representative of the Section to the Contract Practice Section, and replied that the election of a representative was a matter for the Contract Practice Section.

Cases of interest and pathological specimens were shown at all the meetings.

Surgical Section.

Inaugurated February, 1927.

Membership, 27.

President, Dr. J. Mowbray Thomson; Honorary Secretary and Treasurer, Dr. A. E. Lee; Committee, Dr. H. S. McLelland, Dr. E. S. Meyers, Dr. M. Graham Sutton.

Meetings were held regularly during the year, and a high standard, both as regards the papers presented and the discussion resulting therefrom, was maintained. The attendance of members averaged fifteen.

The subjects presented during the year were: "Mal-Union and Non-Union in Fractures," by Dr. A. V. Meehan; "The Diagnosis and Treatment of Ureteric Calculi," by Dr. J. J. Power; discussion on surgical experiences, opened by Dr. J. B. McLean; and "The Technique of Cholecystectomy," by Dr. A. G. Anderson. The Section also prepared a fair average scale of fees for surgical operations for presentation to the Council of the Branch.

Obstetric Section.

Inaugurated November 15, 1927.

Membership, 31.

President, Dr. J. A. Cameron; Vice-Presidents, Dr. L. W. Gall and Dr. F. A. Hope Michod; Honorary Treasurer, Dr. R. G. Quinn; Honorary Secretary, Dr. L. H. Foote; Statistical Committee, Dr. F. A. Hope Michod, Dr. L. H. Foote, Dr. R. G. Quinn, Dr. Kenneth Wilson.

Meetings: The annual meeting, in February, 1931, and four quarterly meetings were held during the year, the average attendance of members being 14.2.

The statistics for the quarterly returns were placed in printed form before members, after which there were discussions on outstanding cases. During the year, in addition to the statistics of the first 2,000 cases which were presented, a Kodak film representing "classical" Caesarean section, was exhibited, preceded by figures on the epidiascope shown by Dr. Kenneth Wilson, presenting the "low operation." It has been decided for the future to present a definite paper each quarter, to be followed by discussion, in addition to the quarterly report.

Medical Section.

Inaugurated June 1, 1928.

President, Dr. S. F. McDonald; Honorary Secretary, Dr. T. H. R. Mathewson.

Two meetings of the Section were held during the year, at which the average attendance was 14.

At the meeting held on May 11, Dr. N. W. Markwell opened a discussion on coronary thrombosis. His remarks were illustrated by lantern slides of electrocardiograms.

At the meeting held on September 14, Dr. L. J. Jarvis Nye read a paper on achlorhydria.

Full and interesting discussions took place at both meetings.

Contract Practice Section.

Inaugurated February, 1929.

The annual meeting of the Contract Practice Section was held on July 20, 1931, when the following office-bearers were elected: President, Dr. J. G. Wagner; Honorary Secretary, Dr. F. W. R. Lukin; Committee, Dr. J. G. Avery, Dr. F. C. Bechtel, Dr. A. B. Carvosso, Dr. Gavin Cameron, Dr. A. E. Mason, Dr. G. A. McLean, Dr. J. L. Selwood, Dr. M. H. Elliot-Smith, Dr. A. W. St. Ledger, Dr. C. E. Tucker, Dr. H. S. Waters, Dr. L. P. Winterbotham.

The year has been a very active one in this Section.

The various lodge bodies have been asking for some reduction in the capitation fee to meet the altered financial conditions. After several suggestions had been put forward and found to be unsuitable for various reasons, it was finally decided to permit a temporary reduction in the capitation fee by 10%, with the understanding that the position was to be reviewed again in December, 1931. The agreement at thirty shillings was not terminated, nor was a new agreement signed.

The annual report of the Friendly Societies' Medical and Hospital Council discloses that, despite the financial depression, they have had a gain in membership during the year of 800.

A dispute arose with the Toowoomba Friendly Societies' Institute, as a result of which the British Medical Association has started a contract service of its own in Toowoomba. Information on this subject is contained in the report from the Toowoomba Local Association.

The schedule of fees for performing operations and special services to lodge members, which was under discussion last year, was abandoned. In its place a definite schedule of fees chargeable to private patients was laid down and the lodges were informed that their members would be entitled to a 25% reduction on these figures.

The formation of a specialist service is still being proceeded with.

*Affiliated Local Associations.**Downs and South-Western Medical Association.*

The annual meeting of the Downs and South-Western Medical Association was held on November 22, 1930, when the following office-bearers were elected:

President, Dr. T. A. Price; Vice-Presidents, Dr. C. B. Deane Butcher and Dr. G. V. Hickey; Executive Committee, Dr. T. Mervyn Hall, Dr. Alexander Horn, Dr. A. A. Heath, Dr. A. W. L. Row, Dr. E. Bruce-Smith, Dr. J. S. Smyth.

On the clinical side several interesting and useful lectures were given:

Dr. J. M. Beale gave two well illustrated lectures covering the more common features, from the radiological standpoint, of pathological and physiological importance in medical and surgical cases.

Dr. A. V. Meehan (Brisbane), with the aid of anatomical specimens, X ray photographs *et cetera*, enlightened and delighted members with his exposition on the more important and less well-known injuries and diseases of the ligamentous and articular systems, stressing special pathological conditions of the shoulder joint, vertebrae, hip joint, talipes *et cetera*.

Our President (Dr. F. A. Hope Michod, of Brisbane), at a clinical evening, brought to our notice the more recent advances in ante-natal care, the methods of dealing with contracted pelvis, toxæmias of pregnancy and occipito-posterior positions. At the same evening Dr. S. F. McDonald dealt with the ætiology, pathology, diagnosis and treatment of congenital pyloric stenosis and intussusception, whilst Dr. Donald Cameron dealt with the problem from the surgical aspect.

The remaining lecture of the year was given by Dr. Donald Cameron, who ably dealt with the evils accruing from child injuries to the genital tract—the pathogenesis of uterine prolapse, cystocele, rectocele, and the methods of repair to the pelvic floor and organs.

Dr. B. L. W. Clarke, during this lecture, operated the lantern and showed numerous slides illustrating the various conditions.

The ambitious programme outlined at the last annual meeting was unable to be fully realized. Much of our time and energies were taken by controversy with the Friendly Societies' Institute. Attempts to bring about a settlement have failed. The 10% reduction in the capitation fee which was finally agreed to by the Queensland Branch of the British Medical Association would have been accepted, but the Institute would not accept the principle of the "open panel." When negotiations with the Friendly Societies' Institute failed, it was decided to inaugurate a British Medical Association contract medical service.

This was commenced in May of the year, with Mr. Wm. Atkinson as organizer. There are now nearly seven hundred members in this service. Eight members of the British Medical Association are acting as medical officers, and two of the medical men specializing in Toowoomba have agreed to allow a reduction of 25% to members of the British Medical Association Contract Medical Service. A committee of the medical officers of this Contract Medical Service has been formed, and meets monthly, and a conference with the chemists has been held with the object of effecting reasonable economy with efficiency in the prescribing of medicines to members.

There is every reason to believe that this British Medical Association Contract Service will be of very great service to the ordinary worker and his family, and also satisfactory to the medical profession.

Our report would be incomplete without tendering the thanks of members of the Downs and South-Western Medical Association to those who have given up their time in their efforts to bring before us new ideas and the more recent advances in medicine and surgery, and to the Council for its generous assistance in the controversy with the Friendly Societies' Institute.

(Signed) Thos. A. Price,
President.

Victor R. Woodhill,
Honorary Secretary.

Cairns Local Medical Association.

On March 18, 1931, at a meeting of the Association held at Cairns, Dr. A. M. Langan, the retiring President, in an address thanked the members of the Cairns Branch for their support during the past year. He stated that his term of office had been a most pleasurable one on account of the uniform courtesy and consideration extended to him, and to each other, by the members during the preceding year.

Dr. Edward Mansfield was elected President for the ensuing year.

The newly elected President thanked the members for the honour that they had conferred on him, and expressed the wish that the cordial relations between the members would continue during his term of office. He regretted that, owing to the long distances from Cairns at which fully 50% of the members are practising, the Cairns members did not have many opportunities of meeting the country members for the discussion of various matters of interest to the profession.

On July 24 the members of the Association were privileged to hear some most interesting addresses delivered by the following: Dr. E. D. Ahern, "Gall-Bladder Disease"; Dr. B. L. W. Clarke, "Radium Therapy of Cancer of the Mouth"; Dr. Alex. Murphy: "Goitre and Artificial Pneumothorax in Phthisis."

The lectures were profusely illustrated by lantern slides and at their termination the President of the Association voiced the unanimous opinion of our members on the eminently useful and practical knowledge that we had gained from the visitors, and expressed the wish that the link forged with the parent Association in Brisbane would be further strengthened by future visits by Brisbane *confrères*.

In concluding my report, I beg to state that it is the unanimous wish of our members that the Queensland Post-Graduate Committee, in connexion with their recently initiated policy of sending out lecturers, should "rep. ad lib."

(Signed) P. S. Clarke,
Honorary Secretary.

Rockhampton Local Medical Association.

The annual meeting of the Rockhampton Local Medical Association was held on January 8, 1931, and the following office-bearers were elected: President, Dr. N. C. Talbot; Vice-President, Dr. Paul E. Voss; Honorary Secretary and Honorary Treasurer, Dr. J. Bruce Gordon.

During the year the Local Association was favoured by a visit from Dr. E. D. Ahern, Dr. B. L. W. Clarke, Dr. Alex. Murphy, of the Post-Graduate Committee. Lectures and lantern slides were highly appreciated by the members of the Local Medical Association.

(Signed) J. Bruce Gordon,
Honorary Secretary.

Central Western Medical Association (Longreach and District).

No meetings of this area have been held during the past year.

A protest of the school ophthalmic medical officers against the 50% reduction in salary made by the Education Department was sent to the Council.

Several communications in reference to lodge matters were attended to.

(Signed) C. V. Watson Brown,
Honorary Secretary.

West Moreton Medical Association.

President, Dr. J. A. Cameron; Honorary Secretary, Dr. T. J. Flynn. Dr. Flynn resigned at the end of July, as he was leaving Ipswich, and Dr. T. J. Cooney is Honorary Secretary *pro tem*.

The activities in connexion with the West Moreton Medical Association have not been very great during the past year.

Representatives of this Association met the friendly societies and agreed to a 5% reduction in lodge fees. At the end of six months a further meeting was held and a 10% reduction was agreed upon for a period of six months. Our relationship with the friendly societies is very cordial.

(Signed) T. L. Cooney.

Townsville Local Medical Association.

Up to date no reports have been received.

Bundaberg Local Medical Association.

Up to date no reports have been received.

Post-Graduate Course, 1931.

Personnel of Committee: In January last a new Committee was appointed, including nominees of the various hospital staffs, to hold office for a period of three years. Chairman: Dr. S. F. McDonald; Joint Honorary Secretaries, Dr. Keith Ross and Dr. Neville G. Sutton; Dr. Ellis Murphy, Dr. B. L. W. Clarke, Dr. G. A. C. Douglas, Dr. K. B. Fraser, Dr. L. W. Gall, Dr. Graham Sutton, Dr. D. A. Cameron, Dr. H. S. McLelland, Dr. Alan E. Lee, Dr. E. S. Meyers, Dr. T. H. R. Mathewson. Dr. Ross has recently relinquished the position of Honorary Secretary, but he is still a member of the Committee.

The annual course, which was held during the first week in June, was very successful, the membership numbering 86. It was gratifying to note that there were more country members than usual present.

Interesting demonstrations and lectures were given by Dr. B. T. Edye, Dr. H. H. Schlink and Professor C. G. Lambie, all of which were well attended and much appreciated.

A number of visits to centres outside the metropolitan area have been made by lecturers from Brisbane, under the auspices of the Post-Graduate Committee. The centres have expressed their appreciation of the arrangement.

The Committee has purchased the Kanavel film, "Infections of the Hand," which has already been exhibited in some of the centres. A kodoscope has also been purchased for showing cinematograph films.

It was thought inadvisable to hold a "refresher" course in Brisbane this year, as had previously been the intention of the Committee.

Coroners Act of 1930.

A letter was received from the Justice Department drawing attention to Section 5 of the *Coroners Act of 1930*, which provides for a penalty to be imposed on medical practitioners for the issue of death certificates in certain specified cases. Members should make themselves conversant with the provisions of this Act.

The section referred to provides that, except with the consent of the Coroner, a medical practitioner shall not, under a penalty not exceeding £200, give a medical certificate as to the cause of death in respect of any death where any person—

- (a) is killed;
- (b) is found drowned;
- (c) dies a sudden death of which the cause is unknown;
- (e) dies while under an anæsthetic in the course of a medical, surgical or dental operation, or operation of a like nature;
- (f) dies, not having been attended by a medical practitioner at any period within three months prior to such person's death.

The congratulations of the Branch were extended to Mr. W. P. Harris on his appointment as Coroner.

Fees for Medical Witnesses.

The Council has not lost sight of this matter, but a further appeal to the Department of Justice for a revision of these fees elicited a reply from the Attorney-General to the effect that it is regretted that the financial position at the present moment does not allow of any increase in expenditure.

Joseph Bancroft Memorial Lecture.

The annual lecture in memory of the late Joseph Bancroft was delivered by Professor F. Wood Jones, of Melbourne, at the Geology Theatre of the University of Queensland on Friday, June 5, 1931. The subject of the lecture was "The Changing Point of View" and was delivered in the usual inimitable style of the lecturer and thoroughly enjoyed by all those who were privileged to hear it.

Invitations were issued to the members of the Board of Faculties of the Queensland University and to the members of the Council of the Royal Society of Queensland. The President presented the lecturer with the Bancroft Memorial Medal at the conclusion of the lecture.

Jackson Lecture.

Some months ago it was decided by the Council to inaugurate a Jackson Lecture, which was established to place on permanent record the appreciation of the Branch of the distinguished services rendered by Dr. E. Sandford Jackson over an extended period of time.

In view of the keen interest which Dr. Jackson has always taken in medical history, it was decided that this should be the subject of the lecture each year.

Dr. Jackson's part in the medical history of Queensland began in 1882, and he was Medical Superintendent of the Brisbane General Hospital until 1898. He was a foundation member and was President of the Queensland Branch of the British Medical Association in 1895, 1911 and 1926, and was a member of the Council for varied periods until 1929.

At the invitation of the Council Dr. Jackson delivered the first lecture on September 4, the subject being "Voyages Connected with the Discovery of Australia: Some of Their Medical History."

British Medical Association Centenary Meeting, 1932.

The Centenary Meeting of the Association will be held in London in July, 1932, and the parent body is anxious that as many members of overseas Branches as possible will be present. Details of arrangements will be published at a later date.

Dr. Alfred Cox Testimonial.

Printed matter relating to the Dr. Alfred Cox Testimonial Fund, which was forwarded by the parent body, has been distributed to all members of the Branch. Full details of the valuable services rendered to the Association by Dr. Alfred Cox over a period of twenty-five years is recorded therein. An appeal for contributions not exceeding 10s. is made to all members, which should be sent direct to the Honorary Secretary of the Branch.

Lantern Slides, Tavistock House.

A set of lantern slides showing the British Medical Association House, Tavistock Square, London, has been sent to the Federal Committee to be kept in Australia for exhibition to the various Branches. It is the intention of the Council to arrange to have the slides exhibited in Queensland when a suitable opportunity occurs.

Visitors.

The Branch has been honoured by visits from four distinguished medical men during the year, who delivered lectures to the members: Professor D. W. Carmalt Jones, of Otago University, New Zealand, who was in Brisbane at the end of last December; Mr. T. E. J. Hurley, of Melbourne, who delivered a public lecture on "Hospital Matters" and also lectured under the auspices of the Royal Australasian College of Surgeons, to which members of the Branch were invited, on 6th August; Professor William Wright, Professor of Anatomy, London, and Professor G. A. Buckmaster, Professor of Physiology at the University of Bristol, also visited Brisbane at the end of August.

Harold Plant Memorial Fund.

Dr. Charles M. Lilley was appointed trustee of the above-mentioned fund in place of the late Dr. J. Espie Dods. The other trustees are Dr. E. S. Meyers and Dr. J. Cameron Hemsley.

Social and Personal.

The annual dinner of the Branch was held at Rowe's Banquet Hall on Thursday, June 4. The guests of honour included the Acting Premier, the Honourable R. M. King, and the Southern visitors who were in Brisbane in connexion with the Bancroft Lecture and the post-graduate course; also Mr. John Wilson and Mr. R. L. Wishart. The attendance of members was not as good as usual.

Prior to the Bancroft Memorial Lecture, which was held on June 5, the President and Members of the Council entertained visitors from the other States at dinner.

In December last the Council also gave a dinner in honour of Professor D. W. Carmalt Jones.

A successful dance and bridge party was held at Lennons Hotel on Monday, June 1, by the Post-Graduate Committee. The arrangements were in the hands of Dr. Ellis Murphy and Dr. V. N. B. Willis. There were over two hundred members and their friends present.

At the request of some of the members of the Branch the Council inaugurated a testimonial fund to Dr. E. S. Meyers as a mark of appreciation of the valuable services

rendered to the medical profession by him in connexion with the Royal Commission on Hospitals. As a result, a handsome cheque was presented to Dr. Meyers in July last.

Congratulations were extended to Dr. W. N. Robertson on the honour of C.M.G. conferred upon him by His Majesty the King. The Branch was officially represented at the Governor's levee held on King's Birthday.

(Signed) F. A. HOPE MICHOD,

President.

B. L. W. CLARKE,
Honorary Secretary.

QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

Balance Sheet as at November 15, 1931.

LIABILITIES.		ASSETS.	
	£ s. d.		£ s. d.
British Medical Association, London—Balance Subscriptions Account	665 7 10	B.M.A. Rooms, Adelaide Street, Brisbane—Library, Book Cases, Furniture, Lantern, Typewriter <i>et cetera</i> .. .	285 0 0
Less Fixed Deposits at English, Scottish and Australian Bank, Limited, Brisbane	593 8 4	Museum Specimens	5 0 0
		Queensland Medical Land Investment Company, Limited—	
Reserve against Exchange on Remittance of Subscriptions Account Balance at November 15, 1931, to British Medical Association, London .. .	200 0 0	4,725 Shares of £1 each, paid up to 10s. each, at cost ..	2,362 10 0
Australasian Medical Publishing Company, Limited	73 1 3	Freehold Property, "Bayview," Wickham Terrace, Brisbane—Land, area 31½ perches ..	1,500 0 0
English, Scottish and Australian Bank, Limited Brisbane—Overdraft, Building Fund Account	1,389 2 0	Improvements, two-storied wood residential building (less depreciation to November 15, 1931, at 5% per annum)	2,071 0 0
Interest accrued to November 15, 1931	11 13 2		3,571 0 0
	1,400 15 2	Furniture in "Bayview" (less depreciation to November 15, 1931, at 10% per annum) ..	340 0 0
Loans from Members, repayable May 15, 1943	5,010 0 0	Australasian Medical Publishing Company, Limited, Sydney—Two Debentures of £25 each ..	50 0 0
Interest accrued to November 15, 1931	126 15 0	Rent owing by "Bayview" Tenants ..	59 1 9
	5,136 15 0	Unused Stationery Coupons .. .	3 12 0
Annual Dinner Account	8 4 6	English, Scottish and Australian Bank, Limited, Brisbane—Credit Balance, General Fund Account	651 6 0
Accumulation Account	440 16 4	Cash in hand	4 2 0
	£7,331 11 9		£7,331 11 9

I have examined the above balance sheet and have obtained all the information and explanations I have required. In my opinion the balance sheet is properly drawn up so as to exhibit a true and correct view of the state of the Association's affairs as at November 15, 1931, according to the best of my information and the explanations given me, and as shown by the books of the Association.

ALEX. MURPHY,

Honorary Treasurer.

Brisbane,

November 19, 1931.

ROY G. GROOM, Chartered Accountant (Aust.).

Auditor.

QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

Building Fund Statement of Receipts and Payments for Twelve Months ended November 15, 1931.

RECEIPTS.		PAYMENTS.	
	£ s. d.		£ s. d.
November 15, 1931.		November 16, 1930.	
To Rents from "Bayview," Wickham Terrace ..	277 8 0	By English, Scottish and Australian Bank, Limited, Brisbane—Debit Balance ..	1,251 12 10
" Queensland Medical Land Investment Company, Limited—Dividend, 12 months ended November 25, 1930	118 2 6	November 15, 1931.	
" English, Scottish and Australian Bank, Limited, Brisbane—Debit Balance ..	1,389 2 0	By Rates, Land Tax, Insurance and Repairs, "Bayview"	223 12 9
		" Interest	275 14 9
		" Sundry Expenses	13 12 2
		" Repayment of Loan to Member	20 0 0
	£1,784 12 6		£1,784 12 6

QUEENSLAND BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

Statement of Receipts and Payments (General Fund) for Twelve Months ended November 15, 1931.

RECEIPTS.		PAYMENTS.	
	£ s. d.		£ s. d.
November 16, 1930.		November 15, 1931.	
To Cash at English, Scottish and Australian Bank, Limited, Brisbane	682 16 2	By British Medical Association, London—Amounts placed on Fixed Deposit at English, Scottish and Australian Bank, Limited, Brisbane, on account of Subscriptions, 1930 and 1931	584 6 3
„ Cash in hand	9 8 0	„ Australasian Medical Publishing Company, Limited—Payments for THE MEDICAL JOURNAL OF AUSTRALIA, 1930 and 1931	581 17 6
November 15, 1931.		„ Library Expenditure—Books, Journals and Bookbinding	52 3 5
To Subscriptions—		„ Bancroft Lecture Expenditure	29 5 5
For Remittance to British Medical Association, London	607 16 9	„ Branch Expenses—	
For Remittance to THE MEDICAL JOURNAL OF AUSTRALIA, Sydney	606 3 9	Office Salaries and Honoraria	396 2 6
Queensland Branch Subscriptions	285 2 4	Printing and Stationery	49 11 4
Organization Fund, Queensland Branch	786 5 9	Electric Light	26 13 9
Capitation Grant from British Medical Association, London	0 6 0	Rent	52 0 0
	2,285 14 7	Cleaning	47 5 1
„ Subscriptions to Annual Dinner Account	49 7 0	Telephone	26 11 0
„ Sundry Receipts	6 14 8	Bank Charges	£7 1 7
„ Australasian Medical Publishing Company, Limited—Interest on Debentures to June 30, 1929	4 7 11	Less Exchanges refunded	6 3 0
			0 18 7
		Stamps and Telegrams	68 16 1
		Audit Fees to November 15, 1930	15 15 0
		Accountant's Fee, preparing special statements	7 7 0
		Insurance—Fire, Workers' Compensation and Unemployment	7 12 1
		Legal Costs re Ethical Rules, By-Laws, Lodge Agreements et cetera	127 3 6
		Renewals and Repairs, Office Furnishings	8 19 9
		Council and General Meeting Expenses, Newspapers and Sundries	18 14 2
			853 9 10
		„ Expenses in connexion with British Medical Association Contract Medical Service, Toowoomba	233 18 5
		„ Annual Dinner Expenditure	47 19 6
		„ Cash at English, Scottish and Australian Bank, Limited, Brisbane	651 6 0
		„ Cash in hand	4 2 0
			£3,038 8 4
	£3,038 8 4		

FINANCIAL STATEMENTS.

The Honorary Treasurer presented the financial statements, which were adopted (see pages 104, 105). He explained that the deficit was due to: (i) the non-payment of dues by members, (ii) provision for exchange, (iii) the establishment of the contract practice service at Toowoomba, (iv) legal costs for the new rules and the contract service, (v) the Bancroft Memorial Lecture, (vi) depreciation of the property "Bayview".

ELECTION OF OFFICE-BEARERS.

The President announced the result of the election of office-bearers and members of the Council.

President: Dr. E. S. Meyers.

President Elect: Dr. Alex. Murphy.

Past President: Dr. F. A. Hope Michôd.

Honorary Secretary: Dr. B. L. W. Clarke.

Representatives on the Federal Committee: Dr. D. Gifford Croll, Dr. E. S. Meyers.

Members of Council: Dr. Hedley Brown, Dr. Gavin Cameron, Dr. D. Gifford Croll, Dr. J. Grahame Drew, Dr. F. W. R. Lukin, Dr. N. W. Markwell, Dr. Ellis Murphy, Dr. S. F. McDonald, Dr. Mervyn Patterson, Dr. W. N. Robertson, Dr. Graham Sutton, Dr. Neville Sutton, Dr. D. E. Trumpy, Dr. Kenneth Wilson.

On the motion of Dr. Gavin Cameron, seconded by Dr. S. F. McDonald, Mr. Roy G. Groom was appointed auditor.

PRESIDENT'S ADDRESS.

Before vacating the chair Dr. F. A. Hope Michôd read his address (see page 69).

INDUCTION OF PRESIDENT.

Dr. Hope Michód then inducted the new President, Dr. E. S. Meyers, to the chair.

Dr. E. S. Meyers thanked the members for electing him to the chair. He paid a tribute to Dr. Michód, who was noted while in Longreach as having had the best lodge agreement in Queensland and who had pioneered the aerial medical service. He was also noted as an obstetrician. During this year he had presided over a team which had done excellent work, both on behalf of medical practitioners and on behalf of the public.

Dr. Meyers proposed a vote of thanks to Dr. Clarke, who was now in his fourth year of service.

Dr. S. F. McDonald proposed a vote of thanks to Dr. Michód for his address.

Dr. Meyers then proposed a vote of thanks to the retiring President for 1931 and to the Council for 1931. This was carried by acclamation.

SCIENTIFIC.

A MEETING OF THE SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Darling Building, University of Adelaide, on August 27, 1931, Dr. A. V. BENSON, the President, in the chair.

Collapse Therapy of Pulmonary Tuberculosis.

DR. H. W. WUNDERLY read a paper entitled: "Collapse Therapy in the Treatment of Pulmonary Tuberculosis" (see page 74).

DR. LEONARD C. E. LINDON read a paper entitled: "Some Notes on the Use of Thoracoplasty in Pulmonary Tuberculosis" (see page 84).

DR. R. W. COWAN wished to congratulate the speakers on the excellence of their papers. He had listened to many splendid contributions on diverse subjects from members of the Branch, but few had excelled, if indeed they equalled, the papers read that evening, in the high standard of the material presented or in the manner of its presentation.

Dr. Wunderly had done a service to the members in emphasizing the great value of rest in the treatment of pulmonary tuberculosis and in showing how that rest could be attained. Apart from some form of collapse therapy, there was no method of securing more than very incomplete rest for the lungs. Confining the patient to bed gave some degree of rest to the breathing apparatus and was probably the best thing to do when pulmonary tuberculosis was first recognized. And often this alone would suffice to bring about arrest of the tuberculous process. But if it failed after reasonable trial, careful consideration should be given to some form of collapse therapy to attain more complete rest. Before any form of such therapy was instituted or even considered, it was essential to have a good X ray picture of the thorax. This should be an absolute rule. Ordinary clinical examination was not sufficient. Even advanced disease might be present in the contralateral lung with no obvious clinical signs.

Of the methods described, artificial pneumothorax was undoubtedly the one of choice. It was the simplest and most effective, and would certainly be more used in the future than it had been in the past. It had its difficulties and its dangers, but in careful hands the latter were not great. Pleural adhesions were the greatest difficulty, and if they prevented satisfactory collapse, other and more drastic methods should be adopted. Air embolism was a real danger and would occasionally occur despite most careful technique. Pleural shock should be avoided by careful local anaesthetization. In a series of several hundred inductions and refills one instance of each of these had occurred. The method of anaesthetization by spraying the skin with ethyl chloride was unsatisfactory; it had no effect on the pleura, which was the most sensitive part.

Dr. Wunderly had spoken of bilateral artificial pneumothorax. Very convincing proof of its efficacy would be needed before he (Dr. Cowan) could approve of this pro-

cedure. The dangers were considerable and the benefits likely to result small. Dr. Cowan had twice seen what was intended for a partial artificial pneumothorax turned into a complete collapse by entry into the pleura of air from the lung, and one of these episodes ended in the sudden death of the patient. The only safe rule was not to attempt even a partial collapse of a lung unless the other one was functioning reasonably well. It was safe enough to bring about collapse of one lung, and after it had reexpanded, to cause collapse of the other; but not both together. The idea of selective collapse was an attractive one, but it appeared to savour more of a pious hope than of an actual clinical fact.

Patients for thoracoplasty must be chosen with the greatest care. In ordinary circumstances it was not justifiable unless the other lung seemed quite sound. With pneumothorax, if trouble arose in the other lung, it was possible to retrace one's footsteps; with thoracoplasty it was not. Phrenic avulsion and apicolysis were used chiefly to reinforce other methods, and especially to secure more complete collapse at apex or base. Dr. Wunderly hoped it would not be long before more suitable cases were referred to the surgeon. But thoracoplasty was a dreadful operation, and it was to be hoped that soon it would be relegated to the limbo of things forgotten. It is a tremendous ordeal for the patient (probably also for the surgeon), it was painful, it was mutilating, and the results were not very wonderful. It was a grave reproach to the physicians that the disease should be allowed to reach the stage when thoracoplasty became necessary. For the unfortunate individual it offered a chance where otherwise there was none, and so it was justifiable.

From a long experience in the treatment of tuberculosis Dr. Cowan believed that no great progress would be attained by means of spectacular operations. More and more must their efforts be diverted to the recognition and rational treatment of tuberculous infection before it became tuberculous disease. A proper organization, built up with this ideal in view, would accomplish great results. In the meantime it was to be feared that in advanced cases resort would have to be made to these drastic surgical procedures.

DR. J. W. BROWNE thanked Dr. Wunderly for his interesting and exhaustive paper. While agreeing with most of the statements and principles laid down, particularly in the sections dealing with the operations of phrenectomy and thoracoplasty, there were a certain number of statements made with which he did not altogether agree.

For instance, the invasion of the lung by the tubercle bacillus was very possibly not always followed by the formation of tubercles with subsequent caseation and scar formation. There was some reason to think that in many cases, particularly in children and young adults, the inflammatory reaction resulting from that invasion of the bacilli might resolve as an ordinary pneumonic consolidation might resolve, and leave few or no traces behind. This would explain the so-called abortive cases and many of those which recovered under ordinary hygienic treatment.

Dr. Wunderly had stated that a spontaneous pneumothorax should be converted into a controlled artificial pneumothorax. In such a case, with an opening from the pleural cavity into a bronchus, it would be interesting to learn his technique for the conversion.

With regard to his statement on tuberculosis complicated by pregnancy, that if seen early enough such patients should be subjected to abortion before the third month, and if seen in the later months artificial pneumothorax should be induced and maintained, he (Dr. Browne) altogether disagreed. He thought that every case of pregnancy complicated by tuberculosis should be treated on its merits. In some cases the pregnancy should be terminated, in some not; and he had seen a number of patients go successfully through their pregnancies without the induction of pneumothorax and with excellent results for both mother and child. The fact that 50% of pregnant tuberculous patients were dead within two years proved nothing. It had been found that the mortality in any ordinary collection of sanatorium cases was much the same. The statistical work in Kalyra Sanatorium and

in King Edward VII Sanatorium in England showed the same result.

In regard to the technique of induction, while the use of "Novocain" was always advisable in the first, and sometimes in subsequent inductions, Dr. Browne did not think it was always necessary. By ordinary freezing with ethyl chloride it was usually sufficient. In an experience of many hundreds of injections of air he had seen air embolus only twice and pleural shock on a very few occasions. However, it was, of course, advisable to take every possible precaution to obviate such happenings.

In conclusion, Dr. Browne stated his belief that surgical treatment of pulmonary tuberculosis had come to stay and had been by far the greatest advance in treatment since the introduction of open air and rest treatment in the eighties of last century.

Dr. Wunderly in reply told Dr. Browne that he would control a spontaneous pneumothorax by inserting the needle and connecting it up with the manometer. If the pressure were high, he would withdraw some air by running the syphon backwards. By adding air or withdrawing it the pressure in the pneumothorax cavity could be controlled. If there were a bronchial fistula, there would be little danger of a "pressure pneumothorax" developing; this could be controlled by an airtight connexion of a rubber tube introduced into the chest through a cannula with a siphon bottle under the bed.

In reply to Dr. Cowan, Dr. Wunderly stated that his experience with bilateral pneumothorax was small. The results were so satisfactory that he intended to continue to use it in cases of bilateral disease. Both patients had active disease in one lung and cavities in the other. The patients were now afebrile, almost free of cough and sputum and able to keep about all day. One of the photographs showed a very good example of "selective collapse"—not a pious hope, but an established clinical fact. Thoracoplasty, far from being "relegated to the limbo of things forgotten", was becoming more popular every year. It was not always painful, it was not mutilating, and the results were satisfactory, for example, Morrision Davies's latest figures of 52% of cures.

Gliosarcoma of the Spinal Cord.

DR. B. SMEATON showed a woman, aged twenty-eight, who had been admitted to the Adelaide Hospital unable to walk or sit up. She had diminished power in her legs, increased knee and ankle reflexes, a double Babinski reflex, and sensation was impaired, especially to heat and cold, up to the level of the fourth dorsal nerve. Her micturition was under uncertain control. A lumbar puncture yielded ten cubic centimetres of slightly yellow fluid under diminished pressure. Lipiodol injection ascended and descended in such a way as to indicate an obstruction about 6.25 centimetres (two and a half inches) in length in the upper dorsal region. Operation disclosed a tumour, on microscopical section a gliosarcoma, which was removed, and distal to this cysts beneath the arachnoid containing about three cubic centimetres of fluid. The spinal cord was very small and flattened. The veins of the cord were enlarged and congested. Six weeks later the patient could walk with sticks, and still later without. A few weeks before the time of the meeting, which was eighteen months after operation, she had developed signs of recurrence of pressure on the spinal cord—paræsthesia and pain over the right thoracic region, slight spasticity of the right leg and a right Babinski sign.

Correspondence.

DIATHERMY AND ENLARGED PROSTATE.

SIR: For many years I have advocated the use of diathermy therapeutically and surgically in prostatic enlargement. Two cases recently came under my notice with post-operative retention.

Case I: The patient, *atatis* sixty-three, was a chronic alcoholic, and experienced acute retention twenty-four hours after operation. A catheter was passed for seven days, then diathermy was used. The prostate was very large and boggy. Five ounces of urine were passed on the first day, seven and a half ounces on the second day, ten ounces on the third day, and thereafter full issue. The patient gave a history of retention five years previously after a "chill".

Case II: The patient, *atatis* seventy-seven, experienced retention one week after operation, and a catheter was used for three days. Diathermy was instituted. On the first day there was no result, on the second day there were a few dribbles of urine that were not measured; on the third day eleven ounces were passed, the catheter being used once; on the fourth day thirty ounces were passed and the catheter was no longer used. The prostate was very hard, and Dr. Penington had much difficulty in passing a number two *bicoudée* gum elastic catheter. I think it was a good test of the effect of diathermy.

Might I suggest that it would be as well to examine all operative cases of sixty years and over and, if the prostate is enlarged, to give diathermy treatment before operation. I used a metal rectal bougie, the shape and size of a hyperextended thumb.

I am well aware that two cases prove but little and that new methods are so often successful at first. Diathermy in such cases may be new to Australia, but it has been tried with success elsewhere, and not only therapeutically. The removal of the obstructing mass with Wyeth's knife through a suprapubic opening seems to me an ideal method.

Yours, etc.,

W. KENT HUGHES.

22, Collins Street,
Melbourne, C.I.
December 7, 1931.

THE WORSHIP OF THE TEST TUBE.

SIR: May I be allowed to comment on an apparent anachronism which occurs in your journal dated December 12, 1931. Dr. Reg. S. Ellery contributes a very able article on the values of lumbar puncture, in which he draws attention to its great utility, and on the next page he writes a letter deprecating the fact that there is too much of the test tube diagnosis in the curriculum. He deplors the passing of the old time clinician who could dispense with modern aids in diagnosis and relied on his own powers of observation. At the same time Dr. Ellery makes the statement that the wholesale and often useless use of test tube methods sends patients to the quacks. It is obvious that he is himself prone to use the laboratory, yet he would in a measure curtail its use to others.

Whilst few will deny the accuracy of his contentions, that unnecessary tests are often made and students should be taught to study the whole individual rather than a few reactions, Dr. Ellery's discussion opens up another very vital aspect of the problem. The patient does not object to intricate tests any more than he is annoyed when his temperature, pulse, respiration rate, heart sounds or blood pressure are recorded. These entail mechanical aids for their elucidation and in their way are as scientific as the so-called test tube aids. Frequently they show negative results and the number of times they are unnecessarily employed is legion, yet presumably this is permissible, even in the case of the old time clinician. He may use the stethoscope, but must eschew the test tube.

The major reason why patients do object to modern diagnostic aids is on account of the cost; they make no objections to the test *per se*. The question of how to reduce the expense of laboratory investigations is the most important problem of medicine today. Wassermann reactions, blood counts, test meals, hemoglobin and urea estimations, bacterial cultures *et cetera* are truly necessary, even though the practitioner is a first class exponent of

intuitive diagnosis. Failure to employ freely such accessories leads to inevitable mistakes, which are as disastrous to the patient's health as to the physician's prestige.

Routine tests such as have been mentioned above are now standardized; they can be satisfactorily performed more quickly and inexpensively than was the case some years ago. The successful physician of the future will have his own laboratory and obviate the necessity of sending away his patients for several one, two or more guinea investigations. Instead, he or his colleagues will perform the tests and charge little more than their cost. Their present expense is destroying the goose which lays the golden egg. Dr. Ellery should ask for more tests, not fewer, but he should also insist on the observance of one of the first laws in economics, which is that the more inexpensive yet trustworthy the article, the greater will be its employment.

If, as is the case, the general public are rebelling against the costs of diagnosis and treatment, a better system must be found. To revert to old time methods of spot diagnosis would be as retrograde as to desert the steam boat for the sailing vessel. Almost anyone will admit that the latter is glorious and its passing is deplorable, but they will insist its disadvantages far outweigh any aesthetic advantages. Mellow memories surround the highly trained physicians of a previous decade. Their autobiographies make pleasant reading, but we must not let sentiment cloud our judgements. Test tube methods are unfortunately necessary.

Perhaps unwittingly, Dr. Ellery has illustrated by his anachronism the need for some form of group system of working, to replace that of individualism. His plea for more lumbar punctures involves a consideration of costs. Short of the universal use of a state service of general hospitals staffed by full time physicians, team work by specialists would seem to be the only alternative.

Yours, etc.,

JOHN BOSTOCK.

Wickham Terrace,
Brisbane,
December 14, 1931.

TRAUMA AND ORGANIC VISCERAL DISEASE.

SIR: In the current issue of THE MEDICAL JOURNAL OF AUSTRALIA is a letter from Dr. C. E. Corlette dealing with criticism of his original paper.

Might I suggest that he has entirely misread my letter? The latter was in no sense a defence of the thesis that "muscular effort may increase peristaltic action". As regards this matter, I would welcome a reference to any authoritative statement or discussion of this question. Is it still another of those many queries to which we have to answer, "we do not know"?

My protest was against dragging in a reference to an outside case without adequate reference to the particulars of the case and without dealing with the condition involved, namely, internal hernia, although it was fully cognate to the subject matter of the lecture.

I was glad to read Dr. H. K. Fry's letter in the same issue, stressing the possible ways in which muscular effort, especially involving the abdominal muscles and the diaphragm, might, and indeed must, cause considerable readjustment of the abdominal contents. That this readjustment, whether accompanied by peristaltic action or not, might reasonably be claimed as the cause of rupture of a gastric ulcer or of an internal herniation in particular instances, does not seem to be a very outrageous suggestion.

Both in Dr. C. E. Corlette's original papers and in Dr. H. K. Fry's letter there is one very important element that is not stressed. In dealing with the abdomen and its contents after making every allowance for hydrostatic principles and physical laws, there always remains the fact that we are dealing with vital living tissues. The influence of peristaltic waves, whether regular and normal

or irregular and abnormal, has always to be taken into consideration; and also the elasticity of the walls of a hollow viscus. So that again the possible influence of muscular effort in starting peristalsis becomes a very vital question.

Returning to the case *Ryman versus Municipal Council of Mosman*, the medical witnesses immediately concerned in the case frankly admitted that the condition of internal hernia might easily arise in the course of the ordinary activity of the bowels, though they considered that in the particular instance the immediate cause was severe muscular effort. What hurts, however, is the fact that five medical men who are accustomed to speak *ex cathedra* and whose opinions carry greater weight than the general practitioner's, could be found to swear that a condition of internal hernia could not possibly be caused by severe muscular effort.

As to the preparation of a paper dealing with the relation of muscular effort to peristaltic action or even a paper dealing with internal hernia, I would submit that a general practitioner who has had no opportunity for research and whose experience of cases of internal hernia and volvulus would probably be covered by the round dozen, is scarcely entitled to pose as "Sir Oracle". However, I sincerely hope that someone with sufficient authority and experience will deal with both these questions.

For the rest, I sincerely trust that I have sufficient humour to be quietly amused at the remainder of Dr. C. E. Corlette's letter.

Yours, etc.,

F. S. STUCKEY.

Mosman,
New South Wales,
December 14, 1931.

WORKERS' COMPENSATION: TYPHOID FEVER.

SIR: The letter of a disappointed litigant which Dr. Stokes wrote, is such a model for these occasions that one feels for him in his double misfortune of losing his case and the upsetting of his long cherished belief that sewer workers do not get typhoid. Misfortunes seldom come singly, and how noble in adversity is Dr. Stokes's loyalty to his department and to his sewage.

Despite Dr. Stokes's doubts as to the banefulness of sewage, we know he will still jealously guard the water supply, but one could wish that his epidemiology was founded on all the facts and not only those cited, which make up but half the story. His pleasure is to satirize the Workers' Compensation Commission for taking a broad view and finding against him and his even broader opposite views.

I am only concerned with Dr. Stokes's epidemiological views so far as they concern a sewer worker who suffered from typhoid, and in this case I advised that the claim that he was infected at his work might be well founded. Being frequently called on to advise on the cause of industrial disease, I am naturally anxious that the principles which guide me are sound and will not shrivel up under the jocund satire of Dr. Stokes, the criticism of others or the frank barefacedness of some. I believe that where there is a definite hazard to health in any occupation and it appears reasonably probable that a worker is affected by that particular hazard, he is entitled to benefit, remembering always that a worker has a vested interest in all community diseases as well as an acquired interest in such diseases as arise from his occupation.

Case: P.S.F., a miner, worked reconstructing a sewer and manhole in Sydney and was markedly exposed to fresh sewage from connected houses. It was his first job where he had been so exposed. He worked from September to December, when he became sick and was diagnosed, in the Coast Hospital, as having typhoid fever. He lived in the sewered area in which he was working. There had been no recorded cases of typhoid in this section for six months.

He did not eat oysters nor drink milk. The milk supply was examined and exculpated. The Commission's finding was "that on the balance of probabilities the applicant must succeed in his claim for compensation. The onus of proving his case is on the applicant, and in cases such as this the onus is discharged if the inference can be drawn from the facts proved in evidence, that the disease which disabled the applicant arose out of, and in the course of, his employment."

"The applicant's work at Double Bay brought him in close contact with the human faeces in the sewer. A medical opinion has been expressed that sewage matter of that kind is a likely medium for *Bacillus typhosus*."

"Evidence has been given that there are many possible ways whereby people do contract typhoid fever, but, having regard to the true facts in this case, the probabilities are very much in favour of the applicant's case, and an inference may be drawn in his favour that his incapacity was due to typhoid fever resulting from his work in that sewer."

Existence of a Health Hazard in Sewage.—Dr. Stokes writes: "All modern researches go to show that the typhoid organism has a very short life outside the human body."

Wilson and Blair, *Journal of Hygiene*, 1931, say: "In thirteen examinations of Belfast sewage in 1928 and 1929 *B. typhosus* was isolated on ten occasions. In two examinations of Lisburn sewage *B. typhosus* was isolated."

"The viability of *B. typhosus* and *B. paratyphosus B* in sewage is longer than was suggested by work of previous observers. It has been possible to cultivate *B. typhosus* and *B. paratyphosus B* from the deposit of sewage stored in a bottle at room temperature for three weeks, on one occasion *B. typhosus* was alive at the end of five weeks. We think that our work gives laboratory support for the possibility of the survival of *B. typhosus* in the outer world sufficiently long to render possible water borne epidemics, the occurrence of which has been definitely established by epidemiological investigation but for the possibility of which laboratory investigators could produce no evidence."

J. D. Allan Gray, of the Bacteriology Department of the Edinburgh University (*The British Medical Journal*, January 26, 1929) describes how, by working with Wilson's technique, he isolated *B. paratyphosus B* from seven out of twenty specimens of sewage, and suggests that this method should be used by public health authorities in tracing carriers.

Dr. Stokes writes: "Because organisms indistinguishable from typhoid bacilli had been recently described as being found in Belfast sewage." One might add that they are indistinguishable by accepted serological methods, and that these organisms will be accepted by bacteriologists as being *Bacillus typhosus*, but Dr. Stokes would here put up two hurdles for the applicant to jump: (a) He must find *Bacillus typhosus* in the sewage in which he worked; (b) (a real Beecher's brook this one) he must show the organisms to be virulent. The applicant might, without impertinence, suggest that this was Dr. Stokes's job.

Dr. Stokes is frankly puzzled as to how a man working in quite recent sewage could ingest sufficient to carry infection, and pained at someone's cigarette hypothesis. This gives me no concern, rather I suggest that he should rejoice that his workers do not demand inoculation, masks, soap, hot water, towels and rubber boots. He clings to the legend that sewer workers do not get typhoid. This is such an old belief (dating back to the discovery that sewer air did not contain many bacteria) that it is entitled to every respect. Has Dr. Stokes looked for typhoid fever among them? Does he contend that these sewer workers are immune? If the present incidence of typhoid among the 400 men more or less continuously employed in maintaining sewers was not greater than that found in the metropolitan community at large, Dr. Stokes could expect to see one affected man in twenty-five years.

In the metropolitan district for the past five years the average annual case rate per 10,000 has been 1.8. At this rate one of his 400 men might be affected in fourteen years.

Not infrequently one is told that a disease does not exist in an industrial group or that it was the product of workers' compensation, only to find on investigation that it had never been looked for, for example, fibrosis of the lungs in coal miners. This case and four cases of typhoid in nightsoil workers have come under my notice in the last three years, and they make me suspect the legend of the lack of incidence of, and the invulnerability to, typhoid among sewer and sanitary workers.

Yours, etc.,

CHARLES BADHAM.

93, Macquarie Street,
Sydney,
December 16, 1931.

"AVERTIN."

SIR: May I be permitted to comment on Dr. Horn's unenviable experience with "Avertin" anaesthesia (*THE MEDICAL JOURNAL OF AUSTRALIA*, December 12, 1931), in basal dosage, of a young and apparently normal female. He states that she was "rather highly strung than otherwise". In view of what followed, though no blood pressure estimations are recorded, I would suggest that she probably suffered from the vago-vascular syndrome, and was subject to "bilious" or fainting attacks in her adolescence. If Dr. Horn will pay me the compliment of referring to my book on the subject of this form of anaesthesia (page 45), he will note that care should be taken to distinguish as far as possible these vagotonic individuals and to place them on a short term of treatment by thyroid extract and atropine before operation. There is in these persons of unstable vascular control, a constant danger of collapse at the time of any powerful extraneous stimulus, whether it be operative shock, childbirth, or a psychic influence, which, with the added effect of such an undoubted vaso-motor depressant as "Avertin", cannot in every case be allayed, even by a single preliminary dose of atropine. In view of the modern denial of the *status lymphaticus*, it is becoming highly probable that such victims are extreme examples of this vaso-vagal heritage. It is possible that a preliminary dose of morphine may have depressed the reflex stimulation by intraabdominal manipulation which synchronized with the collapse.

With regard to Dr. Horn's second question, that of reprecipitation of solid "Avertin", this was undoubtedly due to over-cooling, and had he raised the contents of the flask to 104° F., solution would probably have been complete once more, after which, of course, a second Conger test is obligatory. Injection of fluid containing crystalline "Avertin" into the rectum should never be done, firstly, because there is no guarantee that solid "Avertin" applied directly to the rectal mucosa will not be irritant, and secondly, part of the drug will adhere to the sides of the glass flask and will be unavailable as an anaesthetic. Dr. Horn was fortunate if this actually occurred. In any case, his prompt administration of pituitrin and adrenalin, which are so specially indicated in collapse of this nature, saved the day.

Yours, etc.,

KEMPSON MADDOX, M.D.

135, Macquarie Street,
Sydney,
December 18, 1931.

Obituary.

SYDNEY MANTON VERCO.

WE regret to announce the death of Dr. Sydney Manton Vercò, which occurred on December 17, 1931, at Adelaide, South Australia.

WILLIAM ARTHUR KERR.

We regret to announce the death of Dr. William Arthur Kerr, which occurred at Sydney, New South Wales, on January 10, 1932.

Books Received.

- RHEUMATOID ARTHRITIS AND ITS TREATMENT, by V. Coates, M.A., M.D., M.R.C.P., and L. Delicati, L.M.S.S.A.: 1931. London: H. K. Lewis. Crown 8vo., pp. 128, with illustrations. Price: 6s. net.
- CÆSAREAN SECTION, AN ANALYSIS OF 352 CONSECUTIVE CASES OF THE CLASSICAL OPERATION, WITH AN ACCOUNT OF THE TECHNIQUE EMPLOYED, by F. Ivens-Knowles, C.B.E., M.B., M.S., Ch.M.: 1931. London: J. and A. Churchill. Demy 8vo., pp. 88. Price: 5s. net.
- MIRACLES OF HEALING AND HOW THEY ARE DONE: A NEW PATH TO HEALTH, by J. E. Barker: 1931. London: John Murray. Crown 8vo., pp. 412. Price: 7s. 6d. net.

Diary for the Month.

- JAN. 19.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
- JAN. 27.—Victorian Branch, B.M.A.: Council.

Medical Appointments.

Dr. E. Byron has been appointed a Resident Medical Officer of the Perth Hospital, Western Australia.

Dr. G. M. Oxer has been appointed a Resident Medical Officer of the Perth Hospital, Western Australia.

Dr. A. J. W. Philpott (B.M.A.) has been appointed Deputy Inspector-General of the Insane, pursuant to the provisions of the *Lunacy Act*, 1928, Victoria.

Dr. V. Cook (B.M.A.) has been appointed Medical Officer of Schools, Medical and Health Department, under Section 9 (6) of the *Public Service Act*, Western Australia.

Dr. B. M. Carruthers has been appointed an Official Visitor to the Mental Diseases Hospital, New Norfolk, Tasmania, pursuant to the provisions of the *Insane Persons' Hospital Amendment Act*, 1885.

Dr. L. C. E. Lindon (B.M.A.) has been appointed Honorary Surgeon at the Adelaide Hospital, South Australia.

Dr. H. R. Pomroy (B.M.A.) has been appointed Honorary Assistant Surgeon at the Adelaide Hospital, South Australia.

Dr. L. M. Fraser has been appointed Government Medical Officer at Coramba, New South Wales.

Dr. A. F. Smith (B.M.A.) has been appointed Government Medical Officer at Alstonville, New South Wales.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xvi.

AUSTIN HOSPITAL FOR CHRONIC DISEASES, HEIDELBERG, VICTORIA: Honorary Anaesthetist.

CHILDREN'S HOSPITAL, CARLTON, VICTORIA: Honorary Attending Surgeon to Out-Patients.

HOBART PUBLIC HOSPITAL: Junior Resident Medical Officer.

MATER MISERICORDIÆ CHILDREN'S HOSPITAL, BRISBANE: Resident Appointments.

RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, SYDNEY: Medical Registrar (female).

PERTH HOSPITAL, PERTH, WESTERN AUSTRALIA: Resident Registrar.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members desiring to accept appointment in ANY COUNTRY HOSPITAL, are advised to submit a copy of their agreement to the Council before signing, in their own interests. Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

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